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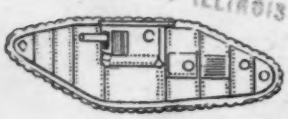

Eleventh Armored Division soldiers run through a smoke filled street at the height of battle in Wernberg, Germany. The units pictured here are the 55th Armored Infantry Battalion and the 22nd Tank Battalion.

Signal Corps Photo

JANUARY-FEBRUARY, 1947

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A Glimpse At War In The Future

COMBAT FUTURAMA

by Leonard J. Grassman

PEACE CONFERENCE STALEMATED—PEACE MOVE VETOED—MILITARISTS PREDICT DEVASTATING PUSH-BUTTON WARFARE—GENERAL CLAIMS MOON FLIGHT IN NEAR FUTURE and PRESIDENT URGES UNIFICATION OF ARMED FORCES.

Headlines glared and blared. The Colonel thrust the paper from him, snorted, and removed his glasses.

He snorted again, rubbed his aching eyes, and glanced over at his wife busily working on a piece of embroidery. He decided not to interrupt the nice quietude of the room.

Colonel McSwain was tired—tired from the long day, tired of the confusion of the current news, and tired as any sixty-year-old man with an active past can be. The Colonel's old bones felt the effects of the experiences of three wars, equally active interims of military planning and preparation, and, in retirement, much political maneuvering to aid in maintaining a strong national security.

The Colonel stretched himself and relaxed into the comfortable bulkiness of his favorite chair. He began to doze and the jumbled news of the day proceeded to race through his mind. Soon the heavy sleeper's breathing could be heard, and his wife glanced over at him and smiled.

Peace efforts had failed. Greed for power had won again, and push-button warfare was an actuality. Colonel Joseph R. McSwain, Cavalry (Ret.), had earned his wings, and he watched with interest the strange battle developing on the World field below.

There had been no surprise attack to start World War III. Our Central Intelligence Group, drawing information from cooperative government agencies with personnel abroad, from every industry with representatives in enemy territory, and from its own trained staffs infiltrated throughout the world, had known the intentions of the enemy for a long time. Diplomats had used this information almost successfully to maintain peace but the enemy had been too intensely aggressive to accept either the appeal to reason or the threat of destruction; he went ahead, planned, and attacked. Even now his enormous installations are launching heavenward great projectiles toward their targets, the major American cities. Legions of atomic-powered planes are taking off from his many bases and his fleet is already under full propulsion toward the United States.

No, it wouldn't be a surprise. Our forces are informed and ready. Far out at sea, our first line of defense—our Navy of gigantic, speedy, and highly maneuverable battle craft—is stretched in a two-thousand-mile-long line, deployed with the task of interception and destruction.

Fully equipped with aerial missile detectors and electronically controlled interceptor and pursuit rockets, the cordon of ships presents a formidable obstacle to the enemy. It is almost impossible to detect in its position. Each craft is made invisible, camouflaged perfectly through means of vacuum-blasted chrome transforming it into a reflector. Streamlining and scientifically placed reflectors diffuse the reflection of the sea back onto the superstructure and hull and modify sun glare. The reduced glare is suffused over the surface of the ship adding a natural sparkle to the reflected water. This camouflage fuses the ship with the sea in a near-perfect blend and detector-frustrating elements in the special chrome coating foil enemy radar.

Already the Naval defense is accounting for much of the great armada of jet-propelled missiles and ships dashing at terrific speeds toward the destruction of our coastal cities and plants, the first target of the etherial invasion.

Collaterally, the Navy is accounting for the surface elements thrust against it to clear the seas of all obstacles and to carry power units, reinforcements and personnel for the close-up action planned to follow the speedy disruption of our defenses and society.

Depths below the surface craft, their sisters of the deep, huge, arrow-shaped submarines, wage another unique war. Patrolling aquatic areas, they clear the way for other undersea elements moving forward to attack oncoming surface forces and to bombard with guided missiles enemy shore fortifications.

Despite the strong Naval defense, a great proportion of the assault, roaring high beyond the clouds, is arching toward the stars to slant, short-powered, down again toward the United States. The Naval units relay their radar bearings back to shore installations where a rapid assembly of information—bearings, altitudes, estimate target numbers—is being passed on to alerted repellant forces which stand ready to frustrate the thrust.

Dotting the seas are floating bases from which radio-controlled interceptor planes rise far beyond the clouds to do battle with guided missiles threatening our country. Similar bases, radar stations, are contacting the

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space elements.

A second wave of enemy surface, subsurface, and aerial forces is now engaging the Navy, which is holding out, but sustaining much damage. The small sea outposts for detection and interception are being knocked out methodically by the enemy, whose tactics indicate an imminent grand scale thrust at the continent.

High over this battlefield of the sea, Colonel McSwain notes an interesting aspect of the battle. Apparently controlled clouds sweep closer and closer to enemy country. More of these clouds can be seen over the sea, and still more are sighted moving rapidly away from the U. S. coast line. The Colonel, possessing an Angel's sight, is able to peer through the cloudy vapor and note with immense satisfaction the formation of ground-controlled missiles set to break from the synthetic cumulus and attack at the proper time. He smiles with pleasure as he notes all this and ponders on the surprise due the enemy. He has become ardently air-minded since achieving his heavenly wings and often remarks to Gabriel, "It took death to convince me it was a necessity to be airborne; it is quite an asset."

The Navy, sustaining the onslaught, is now busy repelling its attackers, and interceptor planes are busy knocking out nonatomic missiles. Obviously, and fortunately for us, the enemy is withholding his atomic force, hopeful of a quick victory without destroying anticipated booty. The sea is dotted with splashes from fallen projectiles and is churning from the fury of the battle. The sky darkens from the concussion, the haze of battle drifts toward America, and it is beginning to rain in torrents.

The initial projectiles which evaded aerial and naval interception are now coming into range of the Coastal Defense Command, and the United States Artillery Batteries open fire, demolishing missiles galore.

This coastal defense is superb, thinks the Colonel, and from his celestial perspective, he has good reason to think so. Its beauty and intricacy intrigue him; it encircles the nation with an iron ring of defense.

Every twenty-five miles lies a quarter of a mile square concrete block beneath which is the complete control system, storage spaces, ammunition dump, and maintenance facilities for the weapon mounted on the concrete base. There, too, is the housing necessary for personnel.

Atop the base, facing the sea or border, is a quarter-circle arc constructed of cylindrical steel. Upon this rides the quad-duty piece (anti-surface, anti-aerial, detector, and launching ramp). It sweeps with magical movement, its ball-bearinged base riding along the tubular arc. Upon detection of missiles, detectors relay automatic calculations of range, speed, bearing, and the piece tracks to the proper degree, rises to the correct angle, and fires forth a huge projectile which speeds with twice the speed of sound to the neighborhood of the target. When proper proximity is reached, this shell breaks open, releasing a hundred smaller radar-fused proximity projectiles which scamper about among the targets, exploding and destroying. In an attack, this same unit is capable of launching enormous projectiles which soar high into the stratosphere across the sea to targets on enemy soil.

The Colonel adjusts himself for a more comfortable position on the heavenly cloud and relaxes to enjoy the show. This cloud is the nearest thing to his beloved mundane chair.

Heavier concentrations of missiles are tearing up from the enemy hinterlands and roaring into the general direction of the Moon. They will arc high and descend toward the center of the United States. The Coastal Defense Command suffers three casualties. Three units are destroyed and the neighboring units are covering the break caused by the casualties. Intelligence reports even heavier attacks on the way. The enemy is now pressing its whole weight into the first day's onslaught.

Smaller but similar mobile units of the Artillery are rushing in to fill the gaps in the coastal defense caused by the destruction of the three installations. One of the replacements is quickly knocked out and a mechanized armored unit, a large, fast, rocket-firing tank, near by, ready for airborne delivery to enemy soil is pulled out from formation and rushed in to fill the latest gap.

Combined Operations is busy in the stratosphere activating the mines floating high above the coast. These enormous gloves, filled with atomic explosive and antigravitational gases are radar proximity fused. They burst when an approaching missile comes within range of the antennas, and are effective in destroying many of the missiles out of ground range. As the minutes pass, some high altituded missiles sweep into the mined range and the heaven is rent by an indescribable explosion. Colonel McSwain feels himself thrust from his cloud and as he settles back into its coziness, remarks: "Almost like the Western Front!"

Evading coastal interception, a number of missiles and televised radio-controlled craft move behind the wall of explosion and proceed to their targets, inland cities, installations and industries. Quickly, armored divisions of the Home Defense, mobile artillery and light armored tanks, speed to combat them. Antiair defense units knock down many, but there is much destruction. Troop and artillery carrying ships of the enemy dash in quickly in an attempt to grasp a desperate toehold near Detroit, but are quickly smothered by the fire of the light units of the mechanized armor. The little person-to-person combat is conducted by home reserve personnel and the enemy's airborne troops are quickly overcome.

In the meantime, the initial thrusts of the enemy made ineffectual through destruction, the National Supreme Command, on information from Central In-

telligence, surmises the enemy is about to use its atomic weapons and orders the attack.

Colonel McSwain leaves his comfortable cloud and takes wing to Mars for a better view of the devastation ahead.

Over enemy territory, guided missiles break from their aerosol antidetector camouflage, speeding from the misty clouds to a crushing bombardment of enemy offensive and defensive installations—their launching ranges and land defense artillery.

They are quickly followed by the fighter planes which pour a deadly fire into their airfields, while along the coast, great torpedoes break through the surface and rise heavenward, level off and speed toward the enemy coast artillery.

The U. S. submarines themselves move in closer to finish off shore-line resistance and the Navy drops its defensive action entirely and assumes the offensive, firing great jet projectiles against the enemy coastal installations.

Following the devastation of our guided missiles are gigantic rockets filled with city-busting explosives which paralyze the enemy. A short time passes and our airborne artillery and troops land to secure the now tottering enemy territory. Huge jet-thrust gliders swoop into subdued areas and disgorge tanks, guns, and men. Ahead of them, earth and sky reverberate from explosion, and they advance, killing off recalcitrants and capturing the defeated. Soon our light armor and infantry units will be rapidly patrolling a ruined aggressor nation. . . . .

Colonel McSwain, accustomed to the sounds of the war below, was stunned by the new quietude in the smoking world. He stared in disbelief at the destruction. It was unbelievable. Even for an Angel. He gasped, moved and lost his seat on the mouth of the dead volcano upon which he had been sitting and fell back into it, plunging down and down, crying out to St. Peter as he tumbled.

"Charles! Charles! What is wrong with you?" he heard his wife complain, and realized he was not as air-minded as he had dreamed. He knew he would always prefer the ground. Colonel McSwain muttered, "Nothing," to his wife's query, and growled to himself, "Of all the damned fool notions!" Glancing about him to note the reassuring protectiveness of the familiar pattern of the wallpaper and the furniture placed about the comfortable room, he cast from his being the shaky reaction extended from the dream. He picked up a copy of his favorite reading, the "Pickwick Papers" and began to read. He had no desire to retire for the night; afraid he would dream again.....

Colonel McSwain's dream in the light of contemporary and immediately potential achievement is, of course, fantastic. What he saw in his dream might be possible in an unforeseeable future should plans for world peace fail and might even make for good argument why world peace must not fail. However, even in the far distant future, the claims about "push-button" warfare are less probable than possible, and it behooves any thinking man to be extremely wary of those who currently make claims on a par with the Colonel's dream.

Still, despite the fantasy of the Colonel's slumber of prophecy, it is interesting to consider closely the combat elements of the dream. Immediately, one is aware that there is a definite place for the specializations of every branch and unit of the services as we now know them. It is a safe assumption that that place will be there always in any war of the future if wars there must be.

Plans for military reorganization—those concerning merger of our armed forces and other alternatives—have uniformly for their goal greater effectiveness of, greater protection by, and a maximum of strength, economy, and coordination in our military forces. All of which are essential for the preservation of our national security.

Of these virtues, the latter—coordination—is the most immediately important. We learned much about it in the late war, have preserved it somewhat currently, but have a long way to go before reaching the perfect coordination shown in Colonel McSwain's war.

So, in striving for such perfection, those on whose shoulders fall the tasks of planning our military organization of the future should pause long in consideration of any element of our present military set-up labelled obsolete or ineffectual in view of modern futuristic warfare before casting such an element aside. Such planners must remember that no matter what type of warfare may occur in the future, it is and will remain simple logic that it will be costly to our national security to do away with completely any unit or force of the present which might be of value later on.

A unit may seem obsolete in the present or immediately apparent scheme of things, but its organization and tradition will always be an asset to our nation in times of emergency. Weapons and organizations never become completely obsolete; *they develop and/or support newer implements of warfare.*

Whether a weapon destroys by pushing a button or by any other means, it takes men—skilled men, trained men—to push the buttons, plan the proper time and circumstances when the pushing is to be done, and to maintain the intricate pieces operated by such buttons. *We need trained manpower more with the advent of scientific warfare than ever we did before.*

Colonel McSwain's dream, its destruction, horror and devastation, may well be considered in the light of the idea of *preparedness* for the security of our nation and the necessity of strength, which should be emphasized constantly in our effort to bring about lasting world peace. We must create that lasting universal peace, but, if failing, we must be PREPARED for any eventuality, and we must be the best prepared.

ARMOR IN EUROPE*

Military Science and Tactics are learned from the practical lessons of war. Each new campaign follows principles of combat that were discovered and used earlier. After the campaign is over it is studied thoroughly so that succeeding battles may be fought more efficiently and successfully. Reprinted here are three articles taken from the Royal Armored Corps Journal that discuss many lessons learned with the use of Armor in Europe during World War II.

I—THE 4th COUNTY OF LONDON YEOMANRY AT VILLERS BOCAGE

by the Late Major J. B. Aird, D.S.O.

ON the afternoon of 12th June, 1944, the Cromwells of the Fourth County of London Yeomanry were dispersed in the open fields to the north of Tilly-sur-Seulles, one squadron keeping a lookout, the others resting after the bitter fighting before that village. It was very hot and comparatively quiet. The Colonel, Lord Cranley, was away and there was vague speculation among the squadron leaders as to what fresh orders he would bring back with him. They did not have long to wonder, for he was soon back and jumping out of his scout car, with orders to move immediately. We were in for a long march along a complicated route and an attack which the Regiment was to lead, and in which surprise was to be the most important factor. The objective was the township of Villers Bocage. Maps were marked and orders given, and in a short time the tanks were marshalled, the men glad to leave the uncomfortable and unpromising area north of Tilly, though a little dubious of the advance along a center line so tenuous and thin on the map with so much at stake at its end.

Axis of the Advance

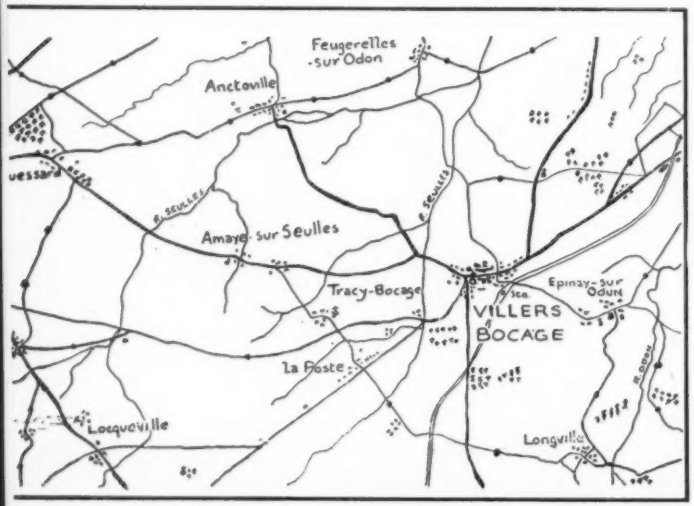
The axis of the advance was a narrow road along the extreme western flank of the British Army running parallel to the Americans. After 15 miles of jolting and dust the head of the column reached the main lateral road from Caumont to Caen and away to the right could be seen the fires and smoke where the American First Infantry Division were fighting to hold the ground they had made in their rapid advance of the last few

*Royal Armored Corps Journal.

days. On the left the Eighth Hussars had had a tank "bazooka'd" and the leading Honey of the Regiment had been fired on by an antitank gun from the east. As it was now dusk it was decided not to push on and the Regiment leaguered for the night in a field to the north of the crossroads.

Early the next morning the advance continued, "A" squadron leading, followed by some Honeys of the Recce troop and "A" company of the 1st Battalion, The Rifle Brigade. Then came R.H.Q., followed by "B" and "C" squadrons, followed by Tac. Brigade. The orders were to push on as fast as possible, there being no further opposition from the crossroads area. The country was very close, the road wandering over switchback hills, gradually swinging east towards Villers. Within a few hours, the leading elements, moving fast, were in sight of the small town. From Brigade came the information that the place was clear of the enemy and the cheering villagers on the side of the road seemed to confirm it. In consequence, "A" squadron galloped through the town, seeing no signs of Germans, and reached their objective on the farther side, a hill which commanded the road to Caen. True, before that a troop leader had reported a German armored car observing from a hill north of the town, but others had disputed this and the sign was disregarded. With "A" squadron on the objective and all seemingly quiet, R.H.Q. moved over the River Seulles and into the main square of the town. Recce sent a patrol to the south on the road to Aunay, perhaps the deepest penetration into France that had been made up to that time. The patrol shot up a German car and captured the occupants, which included an officer who volunteered the information that he was billeting!

Colonel Cranley now decided to go in his scout car to see how "A" squadron and the infantry company were getting on and he left his headquarters with all its appendages covered by a troop of the Recce and some Greenjackets, instructing them to move into the main street towards the eastern exits.



The Tiger

For a short time all seemed quiet, and then the most indescribable confusion broke out. Up the street in front, Lieutenant Ingram's Honeys and a dozen half-tracks of the Rifle Brigade were burning. The R.H.Q. tanks started to move backwards down the narrow street. As they did so, spandaus opened up from the windows above and the street began to fill with smoke and the noise of falling slates, punctuated by the sharp crack of an 88-mm. Out of the smoke trundled slowly a German Tiger tank. Major Carr, the Second-in-Command, fired at it with his 75-mm. but, heartbreaking and frightening, the shots failed to penetrate the side armor even at this ridiculous range. Almost immediately his tank was on fire, he himself seriously wounded and other members of the crew killed or wounded also.

Heavy Execution

The Tiger went on to shoot up the Shermans of the O.P.s with their poor wooden guns, the I.O.'s scout car and the M.O.'s half-track. The other three tanks of R.H.Q. managed to shuffle into various turnings, but soon the troop leader's tank was on fire and also the R.S.M.'s. Captain Dyas, Assistant Adjutant, commanding the remaining Cromwell, watched the Tiger pass him and began to trail it in his tank, hoping to get it from the rear, but by now it had encountered the more formidable obstacle of "B" squadron and decided to beat a retreat. Therefore once more it was head on and there was no escape. The last remaining tank was set on fire.

Captain Dyas managed to escape and, finding the R.S.M.'s tank which, although on fire, still contained a functioning wireless with a microphone hanging out of the turret, spoke to Major Aird, commanding "B" squadron, telling him of what had befallen the troops in the eastern end of the town. As communication still existed between "B" and "A" squadrons, Major Aird decided to take over control. He appreciated that the German tanks must have come in behind the tail of "A," along the road from Evrecy, and that they now stood firmly between "A" and the rest of the Regiment. "A" squadron with some of the Rifle Brigade's half-tracks and antitank guns, therefore, was cut off. The Colonel, who was with them, decided to make a reconnaissance down towards the railway with a view to sorting out the situation and possibly finding a way back.

As Brigadier Hinde had been up in his scout car and had said that the town must be held at all costs, Major Aird set about reorganizing the defence. Some of the Queen's infantry had arrived with antitank guns and these, with tank troops, were dispersed round the roads leading into the Square. To the south Lieutenant Simons, in charge of a troop of Honeys, had had his tank knocked out by a mortar, so his patrol was drawn in.

Simons himself had had his wounds dressed by French peasants, who looked after him until he was recovered enough to escape, but he had little fresh information to give on his return. "C" squadron remained on the high ground to the east of the town.

This was the position in the afternoon when "A" squadron were attacked by Tiger tanks and infantry. The squadron leader, Major P.M.R. Scott, M.C., and his officers were conferring in a ditch with Major Wright of the Rifle Brigade when the attack was launched. The Tigers swept up the road from Villers in their rear, "brewing" a few Cromwells on the way: the German infantry attacked from prepared positions to the east. Major Scott was killed almost immediately, most of the Cromwells were knocked out, and the officers and men trying to escape were killed or taken prisoner by the infantry. At that time, too, Colonel Cranley went off the air and it was presumed that he had been killed or taken prisoner. One survivor alone from among the troops on Hill 213, Captain Milner of the Rifle Brigade, succeeded in getting back under cover of darkness.

A Curious Battle

The Germans must have been heartened by their successes and they prepared to attack the town. During the next four hours a curious battle developed in there, a battle which became a duel between Lieutenant Cotton, M.M., commanding a troop of three Cromwells and a Firefly, with some infantry and antitank guns from the Queen's, on one side and three Tigers and a Mark IV on the other. Cotton's own tank was a 95-mm., not much use against armor, so he put it in a garage and conducted most of the battle on his feet, merely using its wireless to give occasional orders. At intervals there was torrential rain, so he carried an umbrella as well as a blanket, soaked in petrol, with which to burn any tanks knocked out.

The first Tiger was "killed" bv a 6-pdr. which Cotton directed on it. Sergeant Brammall had a duel with another and eventually finished it off by drilling a hole through the side of a house with 17-pdr. H.E. until he could see it, then administering the *coup de grace* with A.P. Sergeant Lockwood and Corporal Horne played hide and seek with the last Tiger and the Mark IV, until they had set both on fire. The French fire brigade was an additional and surprising enemy, who could only with the greatest difficulty be prevented from putting out the fires in the burning tanks. This minor victory was something paid back of the heavy score which the Panzers had run up against the Regiment, and it put new heart into the survivors.

After this reverse, the Germans must have given up the idea of a further attack with tanks, for they now started to shell all they could see and the infantry in the houses and hedges became more active. A few hours before dark the order came to withdraw from the town to the village of Amaye-sur-Seulles, some 4,000 yards to the west along the main axis, where Tac. Brigade had been for most of the day. This was not easy, as part of the road was exposed to antitank and machine-gun fire, while the sunken portions of the road were too narrow to allow a Cromwell to turn. Eventually, under a heavy barrage of smoke and H.E. by the American 155-mm.'s and British 25-pdrs. laid just before dark, the Queen's infantry and the two surviving squadrons were extricated to leaguer in the village of Amaye. Tanks of the Eighth Hussars were there, helping to remove an uncomfortable feeling of loneliness, and the L. of C. was being protected by First Royal Tanks. Fortunately the night was quiet, as there was much reorganization for Major Aird and his new Adjutant. The Regiment had lost its R.H.Q. and one squadron complete—fourteen officers and a hundred men. The Rifle Brigade and the 5th R.H.A. had also suffered severely.

A Jittery Sort of Day

Next day, June 14th, was a nervous, jittery sort of day. The Regiment, with the Eighth Hussars and some antitank guns, were disposed in hedgehog defense of the scattered houses of Amaye, among which also lay Tac. Brigade. On the right, First Royal Tanks were building up and attacking and Fifth Royal Tanks were along the very sketchy center line, some of them on the way up too.

On June 15th, the shelling increased, but down towards Villers the R.A.F. had started. It was the first time that the men had seen the rocket-firing Typhoons and it was a grandstand view, very heartening. In the early afternoon the attack came in from the north and northeast, this time through the orchards. The attack was by infantry, closely packed, with tanks supporting. A full weight of artillery was brought down and the tanks opened up with Besas. The slaughter was intense, widespread and gratifying. Two German tanks were knocked out and the Regiment had lost none. The attack failed.

Full and Merciless Support

Later the Germans again attacked strongly, this time from the southeast. The First Royal Tanks took the brunt of it, but "C" squadron, assisting the Queen's, were fairly heavily involved. The artillery gave full and merciless support, and eventually the attack failed as the other had failed, with many killed, more tanks knocked out, and nothing to show for it. Spirits rose, but the L. of C. was still too precarious and eventually the orders were to withdraw at sundown. The artillery were laying a concentration in the direction of Villers and as it grew dark, Lancasters came over to drop their bombs, the noise of their engines drowning the sounds of the withdrawal which went like clockwork. The Fourth City of London Yeomanry were in leaguer at 0400 hrs. and everybody, dead tired, was asleep within a few minutes.

II—THE 44th ROYAL TANK REGIMENT AT THE RHINE

by Lieutenant Colonel G. C. Hopkinson, D.S.O., M.C.

The battle of the Rhine crossing, so far as the 44th Royal Tank Regiment was concerned, started on March 7th, when we were suddenly pulled out of the Hochwald battle. Puzzled and mystified, the tank drivers and commanders were whipped off their tanks and told to drive them to Nijmegen. The horrors of battle were nothing compared with the horrors that were let loose on "Diamond" or "Ruby" that night.

Dawn broke and the first crews climbed out of their trucks to have a look-see—"browned-off" but ready for the worst. Hm! Not a bad looking joint, no civvies about though. Surrounded by water: what's that smoke screen for? And look at that twelve-foot-high screen on the other side—miles of it! What is this place anyway, a blanking Zoo?

Just then a string of things looking like mobile hip-baths went clattering by, plunged in the water and proceeded to swim across. This was too much and there was a mad dash for breakfast, for no man can stand seeing things like that on an empty stomach!

To Sail Across the Rhine

Yes, it was all too true—we, the 44th Royal Tank Regiment, had joined the Wavy Navy and were to sail our way across the Rhine.

There commenced a furious period of training, lasting 10 days from morning till night. Luckily the training gave full scope for humor and never a day passed without somebody qualifying to receive the concentrated quips of the Regiment. Nautical terms were used freely, often with no regard to their meaning—but they sounded good.

Nevertheless, a tremendous amount of work was got through. Tanks had to be serviced and loaded with ammunition, drivers and commanders trained, the former in Davis escape apparatus, and the latter in what to do with the tiller. Very difficult this was indeed, as the D.D. always did the opposite to what was expected.

Meantime, R.H.Q. was going slightly cross-eyed looking at air photos and trying to spot the winners in the way of an entry and exit on the Rhine. Early on it was decided, though not after a struggle, that we couldn't be expected to do a night crossing in view of the limited time available for training. So all final crossing practices and dress rehearsals were carried out at first light. All squadrons did one of these final schemes and timings for "The Day" were worked out from them.

From 19th March onwards, final adjustments were made and everything tied up as far as could be done. Liberty trucks took off every evening for the old haunts across the Maas; a final pep talk was given by the Brigade Commander, who told us that we were to cross over behind 15th Scottish on the XII Corps front. On March 22nd the tanks made their final crossing of the Maas and lined up ready to be loaded on transporters that night.

The next day we motored off at dawn and the whole party concentrated in a forest just south of Xanten, the tanks getting in at about midnight on the 22nd. On arrival, all vehicles were leapt at by an enthusiastic platoon of an American camouflage company who, in a very brief space of time, had everything, from the latrines upwards, looking like fir trees.

A Night Crossing

March 23rd was a lovely sunny day but at 1100 hrs. R.H.Q. was struck a smart blow when they were told that the crossing was to be that night. Gone were the plans for a peaceful two days of reconnaissance and briefing. People had to get moving. The Intelligence Officer's staff got down to their model-making in double-quick time, pausing only to snatch a mouthful of food, before the scale model of the crossings was completed at 1430 hrs. Briefing started at 1500 hrs. for all officers and tank commanders and went on for the rest of the afternoon. Meantime the near bank and inflation area reconnaissance parties were peeping over the bund to see what they could see in daylight. Comparative peace reigned from then till the guns opened up, and that was that. We, of course, were in the middle of three A.G.R.A.s with a couple of heavy regiments at our back door, just to help matters on. Luckily nothing very much came back in the "in-tray," though one or two landed pretty close to one squadron.

The Barrage

At 2000 hrs., the near bank reconnaissance parties went off, now able to put out their tape and lights. 2200

hrs. came and the barrage touched a new height as 51st Division went in on the left. Then came the R.A.F. to sort out Wesel for the Commandos and at midnight they went in to a full accompaniment and finally at 0230 hrs. on the 24th, in went 15(S).

From then on, as one might say, we were "on the air," as our far bank reconnaissance and working parties accompanied them. Their task was to prepare two exits from the river, mark them, and exercise traffic control during the crossing. Then followed the squadron reconnaissance officers in their Weasels. That, at least, was the programme, but in fact all but one decided that it was safer to go over in a Buffalo. At any rate, only one voice was heard, plaintively wailing in midstream from his Weasel, for somebody to show him a something light!

Meantime, in the leaguer, all tanks had been pulled out on to the road at last light and all pointed in the right direction. Tea and rum was served at 0330 hrs. and at 0400 hrs. the party moved off, winding its way through the gun lines, some of which had to be silenced whilst we passed so as not to blow tank commanders' heads off. Slowly the column moved on down the hill through Xanten towards the inflation area to the east of it.

Meantime, the far bank reconnaissance parties had met with varying success. The right-hand one was going according to plan, but the left-hand party had had a bit of trouble and several casualties. They had been spandau'd, mortared and shelled, but they reported that they would be ready to receive the tanks on time. The Weasels were also gradually coming in to roost and reporting their crossing in rather shaken voices.

By 0515 hrs, the Regiment was complete in the inflation area and that very tricky operation began. Luckily the enemy shelling was sporadic and also not very accurate so far as we were concerned. Not that it had to be, when all that is required is for one exhausted splinter to tear one's canvas. However, only two tanks were punctured and, as dawn broke, the Regiment started to move down to the water's edge. The crossing was made on a two-squadron front: "A" squadron right, "C" squadron left; R.H.Q. following "A" squadron and "B" squadron being held back ready to cross by either route, depending on which had proved the best.

Full of Tanks

Both exits had by then been completed and soon the river was full of tanks, looking rather like floating baths drifting downstream. Over half of "A" squadron was waterborne when the enemy started shelling the tanks as they were entering the water. One tank was hit as it left the shore and sank like a stone, the crew luckily all abandoning ship and making the shore safely. (They now have a swastika flag with, emblazoned on it, "First to the bottom of the Rhine, 2 Baker.") The last tank of "A" squadron was hit as it was going down the runway into the water, but it managed to reverse out and retired for patching. R.H.Q. nipped in while the enemy was adjusting for range and, except for a few splashes in midstream, had no trouble.

Alternative Exit

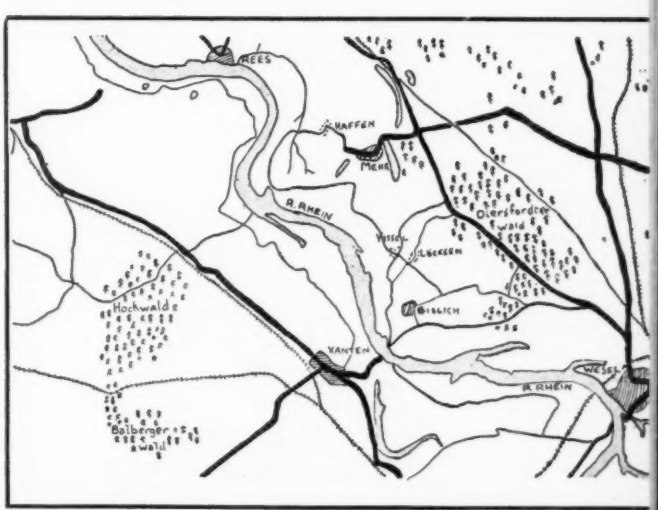
Meantime, "C" squadron had got nine tanks waterborne when the exit and entrance started to collapse so the rest of the squadron were ordered to about-face and to follow on behind "B" squadron who were now using the right-hand crossing. Tanks were now scrambling out of the exits in fine style, an alternative having been found for the left-hand exit. Reconnaissance officers had started to lead tanks away to the concentration area inland under the bund. Here a certain amount of bogging took place in the thick clay belt on the far bank. How we wished at that stage that our A.R.V.s had also been D.D.'d! As it was, five valuable tanks remained bogged on the bank for nearly three days until the A.R.V.s came over by bridge and ferry.

However, a very imposing array of tanks was collected in the concentration area. In fact we only had one more casualty, one of "B" squadron's tanks being hit in mid-stream, the commander and driver being wounded. They were evacuated on to a passing Buffalo and the operator continued to drift on downstream, giving us a running commentary as he went. It speaks well for the invention, as it was a considerable time before, over the air, came "Am abandoning ship now, out."

By 0815 hrs., the whole Regiment was across and concentrated. It had taken only half an hour above our estimate, and contact had been established with an infantry battalion, the 7th Cameronians, and we were ready to go.

Obscure Situation

The ground situation at this stage was obscure. Of the assaulting Brigades, the 44th on the right were firm



in Bislich, but no farther. We were in their left rear, and the enemy were on our left and in front of us, between us and 227th Brigade who were some three to four miles away on our left. 7th Cameronians had not "A" squadron waded in with 44th Brigade to enlarge their bridgehead. This was done successfully and just yet completed their concentration, so to fill in time before 1000 hrs. the villages of Vissel and Jockern were in the bag with a suitable array of depressed prisoners streaming back to the cages.

At this stage, an unnatural hush had fallen all over the battle front. Not a gun was fired and an air of expectancy and waiting was everywhere discernible. Suddenly they came! With a roar of engines, thousands of aircraft poured across the sky and disappeared into the mists beyond. For the next hour the air seemed full and it was only with the greatest difficulty that one was able to concentrate on the job in hand.

Linking the Bridgeheads

Anyway, just after 1000 hrs., we got definite orders that we and 7th Cameronians were to move north and link up the two bridgeheads. With "B" squadron in the lead, we were soon in Vah on the right, where the bridge over the dyke was blown, and also in Wolffskath on the left, near the Rhine bank. The enemy was still about and needed digging out of every building. As he displayed his usual reluctance to surrender to tanks alone, we kept our infantry on our backs as long as possible in order to quicken things up. "B" squadron now turned east and, after "brassing up" Riswickshof and its surroundings, went in there and joined up with 227th Brigade. "C" squadron now took up the chase and headed for Mehr and, apart from the bad going and a few snipers, no trouble was experienced in getting there. "A" squadron in the meantime had moved up on the left and got into Haffen, where they had a lot of fun with some good targets.

On the whole, it had been easier than we expected and it gave us a kick when, after the day's work, we found ourselves not only safely over the Rhine but firmly established in a sizable bridgehead.

III—THE ROYAL SCOTS GREYS FROM THE ELBE TO WISMAR

by Lieutenant Colonel D. N. Stewart, D.S.O., M.C.

On April 29th, 1945, the Royal Scots Greys came under command of the Sixth Airborne Division for an operation which was to be, for them, their last before VE Day. They moved from Puttensen, just northeast of Bremen, a distance of 70 miles into a concentration area southwest of Luneburg.

The bridgehead over the Elbe had already been made with little opposition and bridges were being constructed, hindered somewhat by spasmodic, unobserved but accurate shellfire, and by enemy bombing after dark. A Class Nine bridge and a Class 40 were under construction just west of Lauenburg and, farther southeast, the Americans were building a Class 40 near Bleckede.

On April 30th, one squadron moved forward and, after being strafed by enemy fighters—a fairly rare occasion at this stage in the war, crossed the British Class 40 bridge and reached Boizenburg in the evening. Meanwhile the Sixth Airborne were crossing by the Class Nine bridge and by the evening had got rather more than two brigades concentrated in the Boizenburg area. The remainder of the Regiment also moved forward just north of Luneburg but were allowed no farther as all priorities over the bridges were now given to 11th Armored Division and Fifth British Division. The road from the Elbe back and through Luneburg was packed with their transport, nose to tail, waiting to cross both bridges.

The Use of Camouflage

Early on the morning of May 1st, however, by dint of splitting down to pairs of vehicles and camouflaging themselves as 11th Armored Division, the Recce troop managed to pass the Military Police unobserved and join up with "C" squadron. A small echelon was allowed across and, under command of the R.S.M., also joined this party at 0300 hrs. The Commanding Officer in a Honey tank and one scout car had crossed earlier that night, but it appeared that this was all that was going to

be allowed across for some thirty-six hours.

However, at 0100 hrs., the Regiment was told that the American bridge was allotted to it at 0600 hrs. on May 2nd. The "air" was extremely bad just at this time and in any case the distance between the forward and rear parties was excessive, so the only thing to do was to send a message back in a Weasel. The Recce troop leader was, therefore, sent back in a Weasel to cross the river and give the two remaining squadrons their orders. He started at about 0115 hrs. As all bridges of the river were one-way forward, he swam the river in his Weasel and reached the two squadrons at about 0330 hrs. Having delivered the orders, he set out on his return journey, but did not catch up with his troop again till about 0930 hrs. as the advance had already started and was going very fast.

Meanwhile, at 0530 hrs. on May 2d, the squadron already across the river picked up the leading company of infantry and the advance began at 0600 hrs. The route was northeast, with the eventual objective Wismar, but it was not expected that they would get farther than Wittenburg, or possibly Gadebusch on the first day. The order of march was one section of Recce on the center line, with a further two sections working up subsidiary roads on each side. Then followed the leading troop of Shermans with no infantry on board. Then the remainder of the squadron, carrying a company of infantry, and finally the remainder of the brigade in motor transport.

Without Incident

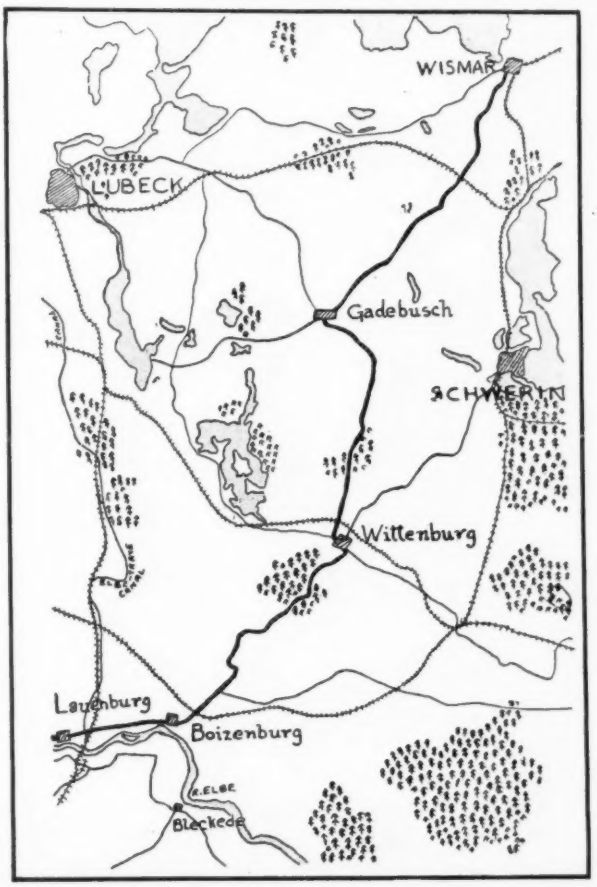
The advance started off fairly slowly and carefully and the first and second bounds were reached without incident. The Recce sections were therefore told to increase speed slightly. Soon all three of them were meeting odd Germans; some singly and some in truckloads, all of whom seemed only too pleased to see them and quite unwilling to fight. All these prisoners were instructed to get on to the center line and join the down traffic. As the main northwest to southeast road through Wittenburg was reached, each Recce section came up on the "air" to say that they were surrounded by several hundred Germans and required help. But by now, it was evident that speed was of paramount importance. The Recce sections were once again ordered to push all prisoners in towards the center line. Many of these drove themselves in and joined the down traffic, which was still entirely composed of Germans. The Recce sections showed some reluctance in doing this, as seldom had they had so many prisoners in their hands before, and it seemed a pity to let them go before seeing what was what!

Flank Sections Called In

The advance continued, and as speed was gradually increasing, the flank sections were called in as they were getting left behind. This meant that the whole of the Recce troop were now on the main axis, followed by the Sherman squadron at the best speed it could make. Odd Germans and parties of Germans were being picked up the whole time, many driving themselves in their own vehicles. These vehicles included 88-mm. guns on tow, with German soldiers sitting all along the barrel, and even one Mark III tank with a white sheet carefully tied over the gun. In the woods just off the road north of Renzow a heavy workshop was discovered with much valuable equipment, including an absolutely new Royal Tiger A.R.V. But no time could be spared and the chase continued.

At Lutzow the leading Honeys halted and it was soon seen that the cause was a German traffic jam. German vehicles were milling about in all directions and the Shermans were quickly brought up and fired a few rounds of H.E. to keep them still. After about 20 minutes the traffic was sorted out, but as the Honeys were by now getting low in petrol, the opportunity was taken to refill.

On towards Gadebusch the town and woods beyond were full of Germans, but none seemed inclined to fight. At one point a German D.R. chipped in behind the C.O.'s scout car and was with the greatest difficulty persuaded that it was best for him also to join the down



traffic and travel the other way. There was no shooting in the town when the tanks went through, but later in the day, as Sixth Airborne Divisional Headquarters were passing, two policemen on point duty were sniped and killed. Luckily this incident coincided with the belated arrival of the remainder of the regiment, who had by now crossed the river and were doing their best to catch up. The Second-in-Command quickly had a troop in action and dealt with the offending area.

Stream of Prisoners

By now the leading Honeys were well on their way to Wismar. They had long since run out of all small-scale maps, but all the roads were well and accurately signposted and a steady speed of about twenty-five miles per hour was being maintained. Germans in all types of vehicles, walking, on horseback, and riding bicycles, continued to stream southwards against our advance. Some were in batches; some singly. It was humorous to watch their different reactions on seeing an Allied tank. Obviously they had no idea of the close proximity of their enemy. Some, on seeing a Honey come round the corner, would leap into the nearest ditch, and were still lying there as the column passed with a puzzled expression on their faces, wondering why they had not been shot. Others had already recovered themselves and were standing by the roadside, with a bewildered grin on their faces. Others again seemed totally oblivious of the fact that these were British tanks, and as the tanks went up one side of the road, they were busy pedalling down the other, their rifles slung over their backs, with never a glance to the other side of the road!

A Level Crossing Hold-up

About eight miles short of Wismar, the leading tank came up on the "air" to say that it had reached a level crossing, but could not get across as there was a train going over. Sure enough there was the train loaded with German soldiers and equipment, including three S.P. guns on flats. The train could not be stopped other than by shooting at it, so it was allowed to go on unmolested, in case it "brewed up" on the level crossing and blocked the road. At this time also several German fighters flew down the road very low. They did not attack and no one quite knew what they were trying to do. Possibly they realized they could not do much as, it must be remembered, there was about as much German traffic going one way as there was British traffic going the other.

The leading Honeys reached the outskirts of Wismar at about 1300 hrs., while the Shermans were still some twenty minutes away coming along at the best speed they could make. A few bazooka men appeared amongst the outlying houses but, after having a look, appeared to change their minds and go away. The problem now was whether to attack a large town with eleven Honeys or to wait till the Shermans and infantry arrived. As there were two important bridges on the northeast of the town, carrying the road which ran east and west along the coast, it was decided to try to reach these and then wait for the remainder of the force to come up.

Getting through the town was a difficulty, as there were no large-scale maps, but by trial and error and the help of an obliging English-speaking German officer, the Honeys eventually found their way through to the eastern outskirts, where a road block was found to be down. The road beyond the block was packed for miles with civilian refugees, mostly in carts, while inside the town was a seething mass of German soldiers, each with his rifle or bazooka under his arm. However, there were no incidents apart from the fact that someone had dropped the road block on the southern outskirts of the town behind the Honeys, thereby holding up the Sherman squadron for a short time when it arrived. But with the help of some German soldiers, the road was soon clear again. The Shermans rejoined the Honeys and the Airborne infantry having dismounted, arrived at the double and took up various positions all around the town. The work of collecting and marshalling the German soldiery began.

Odd German aircraft still continued to fly low over the housetops and it was obvious that there was an aerodrome close at hand, though none was marked on any of the maps. The Honey troop, therefore, with one Sherman troop set off in search and soon discovered it to the northeast of the town close to the seashore.

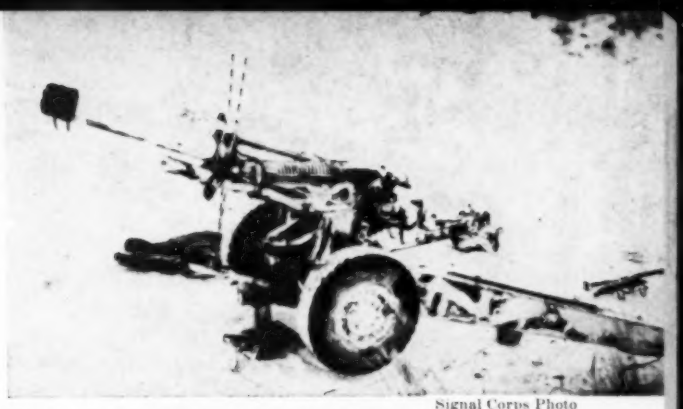
Businesslike Manner

A large number of men were observed running about in the hangars and buildings in rather a businesslike manner and some shooting on both sides took place. Eventually, however, a German came up to say they were very sorry; they had not realized that these were British tanks; and if the firing would cease for a few minutes, they would come out and surrender. Sure enough, five minutes later, two hundred Germans marched out in threes and in perfect step. They were told to go back and fetch their transport, which they did, and the whole convoy set off back for the town.

So ended the war for the Regiment. On that last day they had covered sixty miles in approximately eight hours and the two rear squadrons had covered at least twenty miles more. Not a single tank of the leading squadron broke down, though two of them were almost out of petrol by the time they had reached Wismar. The speed toward the end was the best speed the tanks could do and some of the troop-carrying vehicles farther down the column were doing 60 miles per hour to keep up. As one of the Airborne troops remarked: "I never realized a Sherman could do sixty!"

Towards evening the remainder of the Regiment arrived and all squadrons found themselves billets in various large farms a few miles southwest of the town.

FORTRESS OF THE NORTH



Signal Corps Photo

Partly camouflaged with both white paint and snow a 155mm Howitzer stands ready for action near Ladd Field, Alaska. This gun belongs to Task Force Frigid.

*by Leonard J. Grassman**

Much has been written about the Arctic Regions as the potential fortress of the North. But, no one seems to have considered the negative aspect that the Arctic is militarily impractical both offensively and defensively in warfare as we now know it. Leonard J. Grassman discusses the Arctic's drawback in this article.

CURRENT speculations on the United States' intention in the Arctic regions have us shivering. American writers have gone all out on conjecture, seizing that "writer's opportunity" to write authoritatively on a subject in which no one possesses contradictory truth. Military persons laud possible wartime utilization of the area, and the air minded shout about the Polar Air Route which places everyone and every place within air striking range.

All these conjectures are based on the rather routine experiments of our armed forces, and everyone but informed persons is portraying or forecasting. Even the partially informed, anxious to unload what little unclassified information he possesses, blows his little knowledge into a mass of positive error.

An explorer, long happy with the task of writing about his feats in the tropics two decades ago, writes an expert thesis on the military value of the "Northern Wastes," while a kid pilot who did all his wartime flying over the Hump, tells vividly of the possibilities in Polar Air Routes and atomic war. And, ironically, a magazine writer who fought his war in Washington, D. C., handing out press releases, now verbally girds Alaska in strong armor, while his former assistant who spent three war years in Alaska and on Attu now sits in D.C. turning out press releases.

These stories run from sincere attempts to estimate the military activity to the fantastic on atomic war of the future. All of them brew suspicion and confusion which tend to frustrate sincere cooperation at the Peace Tables of the World, and are providing, in part, the possibility of another war in the future. Their effect on people, especially the uninformed or imaginative, is wrecking and tantamount to a midwinter nightmare with the covers kicked off. More of it will bring shuddering delirium of gigantic jet-propelled icicles, atomic snowballs and amphibious icebergs. The "future minded" militarist, fresh off terminal leave will have our Cavalry mounted on Seals and Polar Bears, and our Armor supplemented by a U. S. Reindeer Patrol.

All of it would be extremely humorous, worthy of the artistry of that hoard of comic books overrunning newspaper stands if it were not for the tragic effect on national thinking and the breeding of international distrust.

In all of it, the basis for the foolish conjecture and the inexpert analysis is the past and current frigid activities of the U. S. Army and Navy, all of which are for the purpose of testing equipment.

*Military Analyst and frequent ARMORED CAVALRY JOURNAL contributor.

Without a doubt, there is much to be gained from these experiments. Equipment and man's ability to cope with the northern elements will be tested. Shortcomings will be demonstrated, along with many unfeasible theories about military activity in the Arctic. Much valuable information for peaceable endeavors is indicted. The source of weather and vast natural resources are apparent along with a tremendous store of knowledge for man and about man.

However, in considering the Arctic as the potential fortress of the North, none of the writers seem to have considered the negative aspect that the Arctic is militarily impractical both offensively and defensively in warfare as we now know it, and, if the predictions about warfare of the future are true, a military system of defense in the Arctic wastelands will be absolutely unnecessary. Atomic-Bomb-carrying rockets will glibly skip the thousands of miles of icebound space and strike their targets direct.

The statement that the Arctic is militarily impractical is not hard to substantiate. The natural elements are limiting to personnel and ordnance. Men cannot operate to even a fair degree of combat efficiency in sub-zero temperatures. This was proven by both Napoleonic and Hitlerian armies, which sustained all the casualties of cold, just as many of our own personnel in the Ardennes offensive.

Combat in the Arctic is a war with natural elements more formidable than any human enemy could hope to be. Cold expands steel and "soups" powder, making it mandatory for improvement in our present artillery and small caliber weapons—if such improvement can be attained. Wearing apparel much more substantial than any we have will be necessary for any sustained operation in the Polar Area. The treachery of the terrain limits ordnance and the vast spaces necessitate long lines of supply which must in turn combat treacherous and natural hazards. Moving steel parts fuze and metal can crystallize in sub-zero temperatures and a whole new set of lubricants and fuels would have to be developed to keep equipment operating.

Progress in physical advancement through the frozen North must necessarily be slow—not at all good in combat wherein speed and fire power are winning features, and, in it all, seasonal limitations are there—even for planes which are purportedly capable of providing swift transportation for both men and supplies. These facts also limit the enemy and curtail the utilization of surprise in attack.

Elaboration on difficulties on this subject can go on without end. Arguments sustaining the belief that our nation can overcome these difficulties can go on infinitely, too, and are both logical and true. We have overcome practically all other natural obstacles in the past and there is great reason to believe we can in the case of the Arctic Giant. So can a potential enemy, but why should he?

There are too many avenues to the United States open to attack. Although longer, they are much more easily achieved than an attack across the Northern Regions. Why then would anyone attempt attack and invasion through a terrain of difficulty, which would entail special equipment—equipment which would be cast aside upon achievement of warmer clime? Such a sacrifice, of course, necessitates duplication in quantity of weapons, equipment and supply.

Attack through the Arctic Wastes, by virtue of the nature of the area and the seasonal limitations, would have to be rapid and almost immediately successful, for a sustained fight would mean defeat. Therefore, the Arctic equipment would be in use but for a short period and it would be necessary to carry along the equipment essential to combat in a milder climate.

This course is too expensive to be militarily practical, and too risky an endeavor when a nation is gambling its very existence on the successful operation of an aggressive war.

Of course, aerial attack may be a different thing. Despite the unknown storms of the Arctic skies, it is reasonable that the United States could be attacked, but it would require a terrific air force to conduct such an operation and such a force could easily be detected in its preparation There, too, again is the risk which might prove too expensive.

On the score of defense, the Arctic Regions provide poor footing. It is only logical that a ring of defense projected into the Arctic would be much bigger than one hugging the boundaries of our nation and would compel a long and weak line of supply.

A snug ring of defense behind naval buffer forces at sea and detector and interceptor elements based north and/or away from the Continental United States would be provided with maximum uninterrupted supply and support; would have smaller areas toward which concentrated might could be thrown, and would always be a sound base upon which to build and develop in the future.

There is no doubt, should war strike in the future, the United States proper will be subject to attack, and the best method of preparation is to be strong enough at our borders to intercept and repulse any element attacking—preventing a thrust at our interior source of strength and our national morale.

Against such a defense an enemy would expend its attacking power, weaken itself to a point at which U.S. aggressive forces could attack and win.

A smaller ring of defense, on size alone, can be close-knit, near perfection. Perfection of such a ring around the United States is a necessity. Lack of that ring was our biggest fright during the last war. The debacle at Pearl Harbor and the loss of our fleet, although saddening and a terrific military blow, were not the cause of fright, but the condition which made a far-flung Pacific aggressive war a must was the sheer indefensibility

of our west coast—a long line, a great part of our ring—miles and miles of undefended beach, most of which was extremely vulnerable to any attack.

The idea of a "Fortress of the North" is not new. It developed in the minds of many men, either militarily or politically, aware or simply informed. Often in the late nineteenth and early twentieth century in U.S. history, men came forth with warnings concerning the vulnerability of the northern side of our nation, and some even cautioned it might be the spot first attacked in the then next war, the war which struck at Pearl Harbor first. A cartoonist on a metropolitan newspaper who had spent his youth prospecting in the northern clime warned against our Alaskan weakness time and again and went as far as to draw up a set of defenses and fortresses for Alaska, but watched his plans pigeonholed by statemen's influence on their contention that such fortification or protection would be an insult—a gesture of ill will toward our friends, the Japanese.

General Billy Mitchell noted the value of the Northern Fortress from the Air standpoint, and many other generals, familiar with the military value of Alaska have stood firm on their contention that Alaska must be protected, but none have gone overboard on the idea of selecting the glacial areas as the warground of the future.

Consequently, it is evident that if the nation's militarists cannot consider the frozen North as a "Northern Fortress" there must be reason for all this activity in the frosty expanses. There is.

Those men, given humility and wisdom by the past war, entrusted with the security of our nation, are not overlooking one single bet, no matter how inconsequential, which might even remotely affect our National Security. Driven by the desire for the achievement of two positive goals—lasting universal peace and absolute protection for our country—they are alert to everything and anything which might foster advancement to either or both goals.

The last, teaching, war provided United States forces testing grounds for our equipment fully in every other theater to a maximum degree. However, because of the geographical aspects of the war, we were not provided with an adequate test in severe cold.

The other testing grounds displayed all the handicaps they had to offer and showed us our every shortcoming in training, equipment and medicine. We learned much and our military experimenters plan to gain equivalent knowledge from the Arctic maneuvers.

Testing and experimentation concerning American equipment has been the avowed purpose, the announced purpose of these maneuvers, but few have been inclined to accept the apparent purpose or the announcement. Relatively came the conjectures and foolish prophecies, which, if one is to ascertain the strength and wisdom of our security planning, must be disregarded as nonsense.

The tests will, beyond a doubt, prove extremely fruitful. The U.S. Military will learn a lot about the inadequacies of our arms and equipment in the North; also their limitations. Paralleling that knowledge will come valuable information on the Arctic to add to our great store already accumulated by our adventurers, Father Hubbard, the "Arctic Priest," and other American explorers of the Ice Country. Along with it will come foundations for outpost planning and other valuable data.

However, great as all this knowledge is, it is but a fragment of the over-all scope of knowledge being assembled by the nation's military protectors. It is extremely important, but it is only part of the whole, which, of course, is the over-all plan of defense for our nation—National Security.

In this plan, the North is of no greater importance than the Florida or California coast, the Panama Canal or the Hudson River. Each is part of the nation, any could be a beachhead of the future. So, it is unwise to accentuate any one spot on our borders—borders, which in the future will be around and above us.

Reading and digesting a half-dozen of the essays recently put forth on U.S. activity in the Far North has us wondering if the military mind has forsworn regulations and basic combat tactics for the ingenuity of imagination, deciding there should be a radical change in battlefields as well as in the type of warfare, saying, "Let us have no more muddy battlefields; a change is needed; let there be ice and slush instead."

Much to the contrary of this nonsensical gibberish is the intent. The prime purpose of every major military act since the end of the war has been to enhance the little advancement we have made toward a lasting peace, and to provide to the highest possible human degree a strong national defense which will deter future aggression and, if failing that, provide our country with a fighting chance.

Some of these acts, it is true, have been somewhat ineffectual—just as many acts in the future will also prove, but they have been executed with that noble goal in view, and, in the future, over the long road of trial and error, ingenuity and inventiveness, and fortitude and sincerity, may provide our country with the achievement of both peace and security.

In the meantime, it behooves every thinking man, especially those associated with our effort toward absolute national security and those who came to know firsthand the horror of war, to disregard the nonsense produced by the fictioneers and so-called "analysts," and heed the words and acts of those responsible to us for the security of our nation.

It is mandatory that each and every American support these leaders wherein they are right; replace them when they are continually in error, but, above all, be not informed by the uninformed, blinded by the stupid, nor confused by the confused.

American Occupation — The Destiny Of 200 Million People

by Daniel C. Fahey, Jr.*

Our objective is to make peaceful, responsible citizens out of the 200 million persons in American Occupation Zones and to make peaceful, responsible governments out of the existing shambles. Colonel Fahey of the War Department Civil Affairs Division discusses the problem at length.

TODAY the armed forces of this country have the mission, in Germany, Austria, two provinces of Italy, Japan, Korea and certain Pacific islands formerly mandated to, or controlled by Japan, of administering or supervising the affairs of approximately 200 million foreign nationals overseas.

This team, the Army and the Navy, and they are still a team, despite the controversy over unification, together with a third member, the State Department, are attempting in these areas where we have so effectively demonstrated our combat superiority, to reorient the political, economic and cultural aspects of the lives of the 200 million persons—to the end that the festers that caused the last war may be removed and cauterized, and that effective therapeutics be applied which will insure a permanent peace.

What the Mission Entails

Basically, our objective is to make peaceful, responsible citizens out of the 200 million and to make peaceful, responsible governments out of the existing shambles. We have won the war—now we want to win the peace.

In the language of diplomatic protocol—

(The Potsdam Declaration—on Japan)

"The occupying forces of the Allies shall be withdrawn from Japan as soon as our objectives have been accomplished and there has been established, in accordance with the freely expressed will of the Japanese people, a peacefully inclined and responsible government."

(The Byrnes Stuttgart Speech, 6 Sept. 46 —on Germany)

"We have learned whether we like it or not that we live in one world from which we cannot isolate ourselves. We have learned that peace and well-being are indivisible and that our peace and well-being cannot be purchased at the price of the peace or well-being of any other country."

"We intend to continue our interest in the affairs of Europe and of the world . . . we intend to support the U.N. Organization with all the power and resources we possess."

"It is the view of the American government that the German people throughout Germany, under proper safeguards should now be given the primary responsibility for running of their own affairs."

(The Cairo Declaration, 1 December 1943 —on Korea)

". . . in due course Korea shall become free and independent."

(Statement of Foreign Secys. US, UK, USSR, 1 Nov. 43—on Italy)

". . . the Italian people shall be given every opportunity to establish governmental and other institutions based upon democratic principles."

(Statement of Govts. of US, UK, & USSR, 1 Nov. 43—on Austria)

". . . to open the way for the Austrian people themselves . . . to find that political and economic security which is the only basis for lasting peace."

How do we translate this language of diplomatic protocol? What is our procedure on the ground? What does a member of our occupation forces, in any of the several areas, do when he learns that the Schmidt family in Stuttgart is starving; that Yamamoto is beginning the construction of an airplane factory, near

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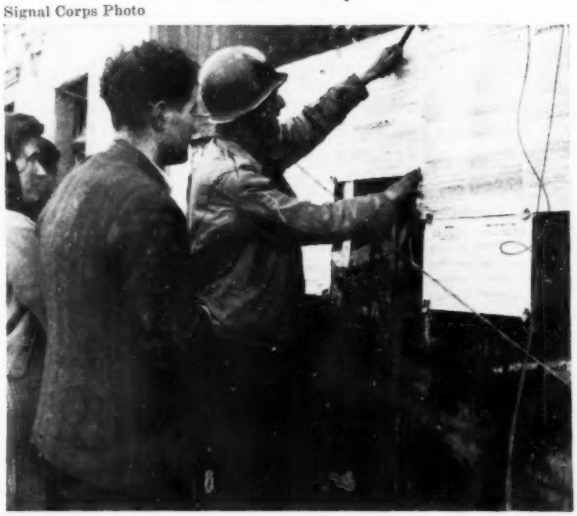
Osaka; that 75 new Jewish refugees have turned up in Wiesbaden; that 100,000 bales of raw silk are available for export from Kyoto; that an electric light bulb plant in Korea could begin to turn out badly needed bulbs—if coal to run the plant and copper for the bulb base were available; that one of the reopened schools in Vienna was using prewar textbooks—because it could not obtain revised and approved books? What does Lieutenant John Jones or Major Bill Brown or Mr. Tom Smith (we now have a number of civilians working right along with our soldiers in these occupied areas) do about the preparation of proclamations and regulations for civilian controls; about the trial and punishment of war criminals; about the supervision of local courts, police systems and prisons; about the normal civilian economy—local, regional, national and even international; about the level of civilian supplies to meet minimum requirements; about the reactivation and supervision of normal functions of civil government such as—finance, industry and commerce, food and agriculture, education, labor, public safety, public health and welfare and religion. Jones, Brown and Smith are also responsible for the reorientation of the thinking of these 200 million persons and supervise the many outlets of public information, including the press, radio, moving pictures, theaters and instructional programs. They are further concerned with property control, transportation, communications, censorship, salvage of materials for civilian use, the control of archives and arts and monuments, reparations claims of Allied governments and the return of looted property.

Obviously many of the above matters are not settled on the spot, nor on the level of Lieutenant Jones, Major Brown and Mr. Smith. For the United States, some are resolved on an interdepartmental or even Presidential level, from whence they require agreement on a governmental level. Intergovernmental agreements are neither resolved promptly, nor too easily.

An American sergeant posts laws for German civilians to read and comply with. This photograph was taken in Lahr, Germany.

Signal Corps Photo



Visualize the complex civilian relationships that exist today in any large city in this country. Go a bit further and think about how that city fits into the affairs of a state or region—politically and economically. Then consider the place of this State in the U.S. as a whole, and the position of the U.S. in the world.

Add to all of these complexities the fact that we are dealing with people we've just defeated (history has yet to record the fact that a conquered people are particularly grateful to the conqueror); that we are dealing through the medium of a different language, different customs, different standards—and you have at least an indication of the scope of our occupational missions in Europe and in the Far East today. These analogies, at least, suggest the scope of our occupational problems on a local, regional, national and international level.

This is a tremendous undertaking, particularly for us with our previous isolationist attitude. In these occupied areas, we together with some of our Allies are the government, until a new government may be constituted; or, as is the case in Japan, we supervise and direct an existing, purged, Japanese government.

What Have We Accomplished?

We have been in this occupation business now a little over a year.

Have we done a perfect job? No.

Have we done a poor job? No.

Have we completed our job? No.

Have we done a reasonable job thus far? Yes. In connection with this affirmative answer, the fact remains that on matters of foreign policy, there is sometimes disagreement between responsible officials in this government. You have undoubtedly seen, and may continue to see, some shocking accounts of the personal misconduct of Generals, Privates and Civilian experts—all a part of our occupation forces. There can be no defense of such misconduct. However, do not overlook the much greater part of the picture and realize that the normal, conscientious and effective efforts of thousands of occupational personnel do not make headline news. In these overseas areas, just as in the United States, it is the two-headed baby and the rotten apple that you are most apt to hear about.

Let us examine some of these things we have actually done thus far since V-E and V-J day.

The military machines of our European and Far Eastern enemies have been destroyed. Approximately 15 million members of these armed forces have been demobilized and sent to their homes. Ninety per cent of the task of repatriating some 10 million displaced civilians is completed. Six million displaced persons have been repatriated from Germany alone, of which two and a half million were from the U. S. zone. Eight

hundred thousand German civilians have been repatriated from the Sudetenland, Czechoslovakia and elsewhere in Europe. Two million Japanese civilians have been sent home to the four main islands of Japan from Korea, China, and elsewhere in the Far East. One million Koreans have been returned to Korea from Japan. The Axis had, through varying degrees of coercion, imported millions of enforced laborers, and had sent out almost as many of their own to exploit the areas they had overrun.

The ardent Nazis and the Japanese ultra-nationalists and War Lords have been removed from positions of authority. The party members of Germany, the secret societies of Japan, together with the collaborators, the jingoists, the chauvinists and expansionists are in the process of receiving the type and degree of retribution due them. Forty-nine major war criminals have been indicted and are being tried before international tribunals in Nuremberg and Tokyo. We have arrested over 16,000 suspects or material witnesses in war crimes for trial. Five hundred and four such trials have been conducted resulting in 457 convictions and 47 acquittals.

In Germany, of the 1,457,000 persons screened in our own area, 374,000 have been disqualified from holding any position higher than laborer. In the early summer, de-Nazification in the U. S. zone was so far advanced as to permit, under our supervision, the delegation of this to the Germans themselves.

In Japan, where we had an existing government, willing to carry out General MacArthur's orders, the purging of bad Japanese was from the outset a Japanese responsibility, under our supervision. To date 186,000 Japanese have been dismissed from positions of authority.

A Philippine Civil Affairs Unit (PCAU) distributes food to hungry Filipino civilians at Pozzurubbion on the island of Luzon.

Signal Corps Photo

The destruction of the economic war potential of our enemies is a less tangible business and is immediately related to the peaceful levels of industry which we will allow to remain, and the reparations in kind, which we together with our Allies have agreed will be extracted from these enemy nations in partial payment of the damage they have caused. A solution to this problem is contingent upon three fundamental points; fact, judgment, and the division of spoils.

First; fact, how many steel plants, nitrogen fixing plants, machine tool dies, etc., are there, and what condition are they in? Second; judgment, up to what level, for the normal peaceful needs of these 200 million, should they be permitted to make steel, extract nitrogen, turn out machine tools, and all the many other products that are as useful in peace as in war? And third; the division of spoils, the disposition of all assets, plants and facilities that will produce beyond the normal level of peaceful requirements.

After the facts are established, the remaining two of these three points require agreement with our Allies.

For Germany, the facts are now reasonably well established. At Potsdam, the formula was agreed upon. However, it was a formula capable of dual interpretations. Once this hurdle of interpretations is over, orderly deliveries of reparations will proceed. Some reparations deliveries have already been made.

For Japan, the facts have not yet been clearly established and Allied discussions are just getting under way to determine the levels of industry to remain, and the division of the spoils.

The removals of those persons responsible for the war, and the return home of the millions of displaced persons have been one of the many steps taken toward the establishment of democratic governments for these 200 million people.

Italy and Austria have reconstituted their own newly elected governments. They are both still under Allied supervision, subject to agreement on their peace treaties —currently under discussion in Paris.

In Japan, political parties have been formed; a national election has been held, in which women participated for the first time; and a new constitution is in the last throes of being established.

A comparison of some of the salient points of difference between the old and the new Japanese Constitutions is fantastic.

On the point of sovereignty, in the old constitution, the Emperor combines in himself the right of sovereignty. In the new constitution, sovereignty rests with the people.

The Emperor, in the old constitution, is sacred and inviolable—has supreme command over the Army and

Navy—sanctions laws. In the new constitution, the Emperor is the symbol of the State deriving his position from the people's sovereign will and having no powers related to government.

In the old constitution, the Judiciary was under the Cabinet, which in turn was responsible to the Emperor. In the new constitution, there is an independent Judiciary.

The old Diet, including a House of Representatives and the semihereditary House of Peers, lacked full control of expenditures and an adequate check on the Emperor. The new Diet will have full law-making authority as well as control over governmental expenditures.

The old Cabinet was responsible to the Emperor. The new Cabinet is responsible to the Diet.

The above are significant changes in the directions of our concept of democracy.

In Germany, while Allied disagreement has delayed the establishment of certain centralized administrative agencies as specifically provided for in the Potsdam Declaration, political parties have been organized and are active. In the U. S. zone, democratic developments have progressed further than in the other zones. Elections have been held and local government is now administered by freely chosen officials. Government of the three Laender (states), comprising the U. S. zone is now headed by German minister presidents, each with their own ministries, who also sit as a council of three, responsible to the German people and under the supervision of General McNarney.

In Korea, the Japanese influence has been removed, but northern and southern Korea are not together politically or economically, nor has a new and representative government been established. During the 35 years that Korea was under Japanese rule, the Japanese in their policy of exploitation, had filled all responsible positions with Japanese and had prevented the training of Koreans unless they demonstrated affection for Japanese control and no inclination toward an independent Korea. Thus, in southern Korea, a year ago, other than puppets, we found but few Koreans who were really able to administer their own affairs. Today, in the U. S. zone, there are Koreans in every governmental department, to whom is delegated all possible authority. The 70,000 Japanese who were running Korea have been returned to Japan. The huge Japanese holding companies designed to exploit Korea have been broken up. The Koreans are being encouraged in every possible way to prepare themselves for that which they have been promised under the Cairo Declaration—a free and independent Korea.

Military's Place In Occupation

You may well wonder how the War Department and the Army fit into this political, economic and cultural program in these occupied areas. In this business the Army is the administrator for the U. S., on the ground, in all occupied areas except for a number of small Pacific Islands, administered by the Navy.

In Washington, the War Department, together with the State and Navy Departments are the triumvirate now formally banded together in a committee, known as SWNCC (State-War-Navy Coordinating Committee), who provide the policy, direction and guidance for our military occupational commanders in Europe and in the Far East. Also the War Department, through its daily cable contact with its field commanders, reflects the practicalities and administrative limitations of our Occupation Forces, and brings this point of view to SWNCC wherein the political and economic views are secured from the State Department.

During the past two years, I have been in almost daily contact with my opposite numbers in the State and Navy Departments. I know their first names; how many children they have; whether or not they have a home garden; whether they prefer Ponderosa tomatoes to the Rutgers variety and generally their over-all points of view, in so far as they reflect their respective Departments. My opposite numbers in the State and Navy Departments know the same things about me, and we still speak, we are pretty good friends. This same confidence and mutual understanding that exists on my level, also exists above me, on the secretarial level and below me on the working party level.

Thus on a policy level in Washington, we have, in fact, a successful marriage of the political and economic philosophy of our State Department with the operational realities of administering U. S. interests in these various occupational areas. This marriage has not been nearly as turbulent as you might suspect and it has produced realistic, workable policy very much in the best interests of the U. S.

The Army would prefer to revert as soon as possible to its more traditional role, and to pass on to some other agency of this government the responsibility of administering U. S. interests in these occupied areas. At the present time, there are no enthusiastic applicants eager to assume this administrative responsibility.

The awesome spectre of devastation and destruction that I, personally, have seen in Europe and the Far East, together with the accompanying poverty, starvation and unrest completely stagger the imagination. Miles upon miles of bomb craters, twisted steel, gutted homes and demolished factories, roads and bridges are a most tangible aftermath of the impact of total war.

The problems in these occupied areas are certainly not the only external problems we face in our world relations, but their proper solution will go a long way toward the peace and stability we so badly want. Certainly the fate of these 200 million, probably, the fate of the world, is contingent upon how well we do our job—how well we cauterize the existing raw infected wound, and proceed with the program of therapy.

Russian Cavalry In Mass

SOVIET DOCTRINE FOR EMPLOYING HORSE-MOUNTED TROOPS

Horse cavalry, like an insurance policy, is expensive but nice to have around when you really need it. In Russia, where horsemanship is part of the everyday life of many thousands of people, the Red Army is able to maintain one of the finest horse-mounted components in the world. Here is the doctrine with which Soviet cavalrymen rode to victory in World War II.

THE Red Army, unlike the rest of the Allied powers, did not relegate the horse cavalry into the discard during World War II. Instead, Soviet Russia made effective use of its cavalry components, and even increased the number of horse cavalry units. The U.S.S.R. proved that the employment of horse cavalry as an independent striking force, and as a component of a cavalry-tank team, is clearly justified. The results obtained by Red Army cavalry units have proven the right of the almost legendary Cossack to remain part of the armed forces of the U.S.S.R. The lessons learned may well be studied by other countries.

Horse cavalry has always played a large part in Russian military campaigns. Russian cavalry forces have been known in every war in which Russia's troops have fought. During the reign of Czar Ivan the Terrible, a relatively small Cossack force under Ermak achieved the conquest and annexation of Siberia. The great distances, unmarked by roads, and the difficult terrain of that area were tailor-made for a cavalry operation.

Even to this day there are large areas of flat plains and steppes in the U.S.S.R. that have only a limited network of roads. Easy traverse of these areas is feasible only to horses. Climatic conditions in Eastern Europe, especially during the spring thaws, place a very stringent limitation on all movement, except over first-class highways. Each spring the Ukraine, White Russia, and Eastern Poland become veritable seas of almost unbelievably deep mud. In consequence, cavalry has been an indispensable arm of the Red Army, even in this war of mechanized and motorized forces.

Since 1917, when the Red Army took over the forces of the Czar, the cavalry units of the Red Army have undergone many changes. Among other things, the over-all strength of the cavalry arm has been increased. During World War II, the Red Army had approximately 10 cavalry corps. Other changes have increased the fire power of cavalry units by adding mortars; more and heavier artillery, including self-propelled; more automatic weapons, including submachine guns; and by making tank regiments an integral part of cavalry corps.

Further emphasis is placed on the Red Army evaluation of horse cavalry as a fighting arm by the establishment, since 1934, of 74 stud farms, geographically located to breed horses best suited to the locality. The farms are operated by the Red Army Remount Service.

Red Army cavalry organization differs considerably from the organization of U. S. cavalry units. Numerically, Red Army units are the smaller. A Soviet cavalry corps is roughly equal numerically to a reinforced U. S. horse cavalry division. Within the Red Army cavalry corps, also, are from two to four tank regiments as organic elements of the corps. The U.S.S.R. cavalry regiment is so designed as to provide a small and mobile striking force, heavily reinforced by supporting weapons. Numerically equal to less than half a Red Army infantry regiment, the U.S.S.R. cavalry regiment has almost as much fire power in supporting weapons.

In the cavalry corps, the artillery elements play no small part. The corps artillery commander has at his disposal five artillery regiments, armed with a variety of weapons. The type and relative numbers of artillery weapons are selected to achieve maximum flexibility and shock power without impairing the mobility of the corps. Including mortars and artillery of the cavalry divisions, the cavalry corps has nearly 350 pieces of artillery, plus several multiple rocket launchers. This is sufficient to throw, in a single salvo, a metal weight of more than 6 tons.

Cavalry In the Offense

Red Army doctrine stresses that cavalry should be used as an independent striking force; that cavalry is

not a substitute for mechanized forces, but is a powerful force for operations where motorized units are handicapped by impassable terrain. By Red Army definition, cavalry is capable of taking part in every kind of engagement, and of carrying out actions of every type in cooperation with other arms, in addition to being able to operate independently.

Operating apart from other troops, horse cavalry attempts to strike the enemy flank or rear, to encircle and destroy the main body, and to cooperate generally with air forces, armored units, airborne units, and frontal assault groups. Other cavalry missions are large-scale raids, screening of troop movements of other arms, and counterattacks against the enemy flanks and rear from concealed areas in the rear of a defensive position.

Cavalry can operate in very severe climatic conditions and over severely cut-up terrain. Over extremely difficult terrain, Red Army cavalry can average 5 miles per hour. Small units are unable to maintain continuous movement for long periods under combat conditions due to lack of organic transport and difficulty of resupply. Large units, however, with a sizable supply train and an established resupply system, can operate for much longer periods and over long distances. One reinforced cavalry corps was given the mission of penetrating behind German lines and advancing for 60 miles, parallel to the front and across the enemy lines of communication, thus effecting a junction with another cavalry corps in the area. The movement was entirely through forests and cross country in 2 feet of snow, with temperatures as low as 30 degrees below zero. In 6 days, the corps traveled 55 miles and captured large supplies of enemy matériel.

Red Army conception of cavalry raids extends to larger operations, over a longer period of time, and with a larger body of troops than is normally considered as a raid by U. S. doctrine. One raid made during World War II included a whole corps and lasted for 135 days, much of the fighting being behind the enemy lines.

In the breakthrough, Red Army cavalry was a valuable asset to the pursuit. When an enemy rear guard attempted to hold up the pursuit the cavalry was able to make wide flanking movements through swamps and other difficult terrain to strike the retreating enemy in the flanks and to set up road blocks. In addition, the Soviets believe cavalry is useful in attacking enemy artillery and salient terrain features to protect highways along which armor and self-propelled artillery can then advance more easily.

It is a Red Army practice to detach small cavalry units from the main body to reduce by-passed strongpoints. Here the cavalry attacks dismounted from all sides, supported by their mortars and machine guns. Generally these detached units are of sufficient strength to reduce the strongpoint quickly so that they can rejoin the main body of cavalry troops.

Cavalry is used by the U.S.S.R., in conjunction with other arms, in the same manner in which it is used by other armies. Cavalry is used for reconnaissance, counterreconnaissance, screening, and patrol missions. The Soviets make extensive use of night cavalry reconnaissance and raids, particularly during winter weather.

With infantry, Red Army cavalry is used to great advantage. While the infantry holds the enemy with a frontal attack, the entire mass of cavalry and tanks are thrown in on the enemy flank and rear.

The best time to commit a cavalry force, the Red Army believes, is when an initial penetration of enemy defenses has been made by a frontal or enveloping attack. At that time, when the enemy is bringing up his reserves and his defenses are in a fluid state, the enemy has not had time to consolidate and organize any strong defensive position, and cavalry will encounter conditions that are conducive to success.

Cossack Machine-Gun Carriages Advance to New Positions in Crimea.

Cavalry In Defense

In defense, Red Army cavalry is used to cover the withdrawal and to protect the flanks and gaps between units. In extreme conditions, the cavalry troopers dismount and engage in defensive combat as infantry. Care is always taken to conceal horses in a defiladed area for safety and to facilitate withdrawal. In the defense of road blocks or tactically important terrain, the organic artillery and mortars are the basic defensive weapons upon which the Soviet cavalry relies.

Training

Immediately after the Russian Civil War, the cavalry forces were led mostly by ex-Czarist officers who joined the Red Army. Then an officer cavalry school was established to develop cavalry officers of proletarian origin. This school later became the Buddennyi Red Army Cavalry Academy of Moscow, and is now the highest cavalry institute in the U.S.S.R. During the war there were nine cavalry officer training schools in operation.

Enlisted men and NCO's were trained in replacement cavalry regiments. There were 34 of these regiments during the war.

The cavalry courses at officer schools have ranged from 3 years in peacetime, prior to 1937, to 12 months during the war. Enlisted men serve 2 years in the cavalry army in peacetime. During the war, basic training for enlisted personnel lasted 8 months. During this time the enlisted man was trained in field tactics, individual weapons, elementary topography, care of horses and equipment.

Conclusion

The U.S.S.R., with vast distances and few roads, and with severe climatic conditions during much of the year, has used horse cavalry to great advantage during World War II.

When a horseman is likely to be seen by the enemy, Cossack scouts dismount and cross dangerous open ground on foot at the double.

By the results achieved, the Soviets have justified the use of cavalry, not as a substitute for armor and mechanized forces, but as an independent arm and as a supplement to armor and mechanized might in operations over severe terrain.

Russian cavalry has great power in supporting weapons. The organization is so designed as to provide a small and mobile striking force with adequate support of artillery, mortars, and automatic weapons. Cavalry and tanks have been combined into a smooth-working and effective organization.

In World War II, as in most all of their other wars, the Russians were able to use large masses of horse cavalry, since much of the fighting took place within the borders or countries adjacent to their homeland. But over long distances, cavalry is not as economical. Transport of horses and equipment, especially ocean transport such as would have been necessary for the United States in the Pacific War, requires a large allotment of transportation facilities. In fact, the U. S. did maintain one horse cavalry regiment briefly in New Caledonia early in the war, but this unit was mounted on horses shipped from Australia. The unit existed as a horse-mounted organization only briefly, for it was eventually dismounted and sent into infantry action elsewhere in the Southwest Pacific. The only U. S. horse-mounted cavalry regiment to see action in World War II was the 26th Cavalry, a regiment of Philippine Scouts who covered the withdrawal of U. S. and Philippine forces to Bataan peninsula. This unit fought a classic cavalry rear-guard action from Lingayan to Bataan. Its mission was accomplished, although the regiment was virtually annihilated.

A Cossack machine-gun unit in the attack. These are called "tachankas" and a popular Russian song has been composed about them and their drivers.

The Importance of Cavalry*

WHEN motors came into wide use in military organizations, and mechanization was becoming general in all armies which regarded themselves as modern, many of the military profession believed that the cavalry had fulfilled its mission and was becoming a thing of the past. Actually, it has not been so, and we saw cavalry employed with great success in World War I, even after the appearance of tanks in the year 1917. In the Spanish War the rôle of the cavalry was a most outstanding one, then in Poland it performed tasks of the greatest importance and finally, in Russia the Cossacks demonstrated to the world the capabilities of a well-equipped and organized cavalry.

Of all military questions debated since the termination of World War I, none has been the subject of more study and controversy than that of the mission of cavalry in modern battle. It was practically agreed during the first three years of that war that cavalry was doomed to disappear, since its rôle in combat and the rapid and overwhelming decisions its employment produced were made impossible by the destructive action of automatic weapons. There were those who said that: "A part of the classic functions of cavalry will fall to the air forces; and another to the squadrons of tanks." The majority of the regiments of the French Army, for example, were dismounted, the troopers converted into infantrymen, and their officers placed in command of infantry formations. One of the Verdun forts was commanded for several months by a cavalry officer. Nevertheless, it is to be observed that the French General Staff did not proceed to disband all cavalry units as the war continued, but, on the contrary, maintained several of the very powerful ones at the disposal of the high command.

The Spanish War served as a testing ground for all arms, and especially for the cavalry. The first appearance in the Spanish War of considerable elements of this arm was in the hills and plains of the Jarama river valley, where a few squadrons were the first forces to reach the enemy bank and dominated the entire Jarama salient. That event began a demonstration of the ability of the cavalry to fulfill missions of great importance. In the battle of Alfambra the results achieved by the cavalry were magnificent. It was here that by means of a surprise charge, and in less than a half hour, all the enemy positions were taken, causing confusion and capturing the greatest number of prisoners recorded in any single battle of the entire Spanish War. The tactical surprise produced by the employment of cavalry had been complete. So many successes were obtained with this arm, that from five squadrons at the beginning of the war, the number was increased to more than fifty by the time the war had ended.

Poland, when invaded by Germany, had forty regiments of cavalry, which indicates the importance which had been attached to this arm, but this cavalry, armed only with carbines and lances, was powerless to oppose the German armored divisions effectively, in spite of its courage. This shows us that the important thing is, not to have a large force of cavalry, but to have one which is well equipped. If the Polish cavalry had been equipped with modern weapons, its resistance to the enemy would have been considerable.

In Russia we have seen that the spring thaws turn the roads into a sea of mud, making them impassable for vehicles. This makes the large-scale employment of cavalry imperative on this front, and the great success that attended its use is well known.

The Germans in the recent war, not only employed cavalry in its characteristic missions, but assigned another mission to it, consisting of the following:

After the armored units had broken the enemy positions and opened a breach in depth, there remained small centers of enemy resistance which it was impossible to annihilate because the speed of the attack did not permit the diversion of tanks for action against objectives other than the assigned one. Cavalry units were therefore sent into action and rapidly cleared the terrain of all enemy forces which remained, and opened the way for operations of the other arms.

If cavalry has been of such great importance in Europe where most nations produce their own motors, where highways cross the country in every direction, and where the terrain is not so difficult to negotiate, that is, where the possibility of employment of mechanized forces is almost unlimited, what may we expect in these countries that are so poor and which are obliged to import not only their motors but even the smallest replacements? Their degree of industrialization is far from being able to provide us with the necessary elements for the mechanization of our troops, possible theaters of operation are many, and manpower extremely scanty. There are only second-class roads, and their number is extremely small in comparison with the extent of the country, and the terrain renders even the movements of infantry forces difficult at times. We must then be convinced of the fact that the mechanization of our forces cannot be justified. Their motorization, however, is indispensable, especially in some regions of the country where the road net is better.

There remains then, sufficient evidence of the need for a well-equipped and organized horse cavalry in our army, capable of efficiently meeting the demands which are made upon it. It would be foolish to think at present, or for a long time hence, of the mechanization of this arm in our case, but this without denying that experimentation along this line can be started.

*Translated and digested at the Command and Staff College from a Spanish article by Captain Camilo González in "Memorial del Estado Mayor" (Republic of Colombia), March-April, 1946.

The Russo-German Battles – 1941-1945*

by Captain Fergus N. Fitzgerald

CONCLUSION

(Editor's Note: *In this, the concluding portion of Captain Fitzgerald's study of the Russo-German battles, the author deals with Malinovsky's advance across the plains of Transylvania, and the Battle of Berlin.*)

Campaign in Transylvania—October, 1944.

THE defection of Rumania from the Axis team left the Transylvanian frontier of Hungary undefended. By September 12th, 1944, Marshal Malinovsky's Second Ukrainian Front had established a bridgehead in the valley of the River Maros and was advancing in two directions, northward towards Cluj and westward along the bank of the river towards Szeged and Budapest. General Petrov's Fourth Ukrainian Front was engaged in crossing the Carpathian Mountains from southern Poland and it was essential that the two armies should make contact before the Germans in northern Hungary could react. At the same time Marshal Tolbukhin's Third Ukrainian Front was operating along the Danube valley in Yugoslavia and the Russians did not wish a re-entrant to be created between Malinovsky and the Red forces south of him. In his efforts to maintain contact with Tolbukhin and at the same time to effect a junction with Petrov, Malinovsky directed his two columns to diverge. As a result a smaller but serious re-entrant developed between the two parts of Malinovsky's Front west of the Bihar mountains.

Malinovsky endeavored to fill this gap with Kuban Cossack cavalry supported by tanks, but their numbers were too few for the task. On October 9th, 1944, Russian tank-cavalry forces met German panzer formations south of Debreczen. The result was an armored battle which lasted 12 days. The Red troops finally took Debreczen, but the loss in tanks to both sides had been extremely heavy.

While farther to the east Malinovsky's northern column reached Cluj, the victors of the Debreczen battle entered the town of Nyiregyhaza in northeastern Hungary on October 22nd. Two days later the Germans counterattacked and compelled the Cossacks to retire. Want of infantry and artillery support was being felt.

On October 30th the town of Cop, which the troops of Petrov's Fourth Ukrainian Front had occupied a few days earlier, was also recaptured by German units. A 45-mile-wide gap had been created between the two Russian Army Groups. The position was a dangerous one for the Red forces.

In the meantime, Malinovsky's southern column reached Szeged almost as soon as the northern wing of the Army Group entered Cluj. Elements of Tolbukhin's Third Ukrainian Front made contact with Malinovsky's troops at Szeged while other formations crossed the Danube and approached Lake Balaton from the south.

This fresh threat to their communications with the Hungarian capital obliged the Germans to abandon their salient between the Carpathians and the Bihar Mountains. Petrov and Malinovsky were saved from possible further defeats by action far from their own area of operations, but it had been clearly shown that even at this late stage in the war the Germans were ready to exploit any errors in command or strategy made by their opponents.

Relieved of hostile pressure, the Cossacks retook Nyiregyhaza on October 31st. Petrov was less rapid in reacting to the improved situation, and after reorganization he entered Cop for the second time on November 23rd. By then Malinovsky had far outpassed him and on December 9th united his two columns for the assault on Budapest.

The near-disaster to the Russians at Nyiregyhaza and Cop was the result of the disorganization caused by too rapid an advance, and by the change in the direction of attack brought about by the widening of the front. The Russian Command consistently showed itself unable to make rapid adjustments in plan, and once troops or formations were committed to any course of action it was not easy to alter the direction of operations. This weakness applies to any army, for it is no easy matter to make a major change with units already in the process of advancing, but the Russian leaders particularly appeared to lack the vision needed in such cases. At all events, Marshal Malinovsky made a second error, in addition to that already made by the Supreme Command, in permitting the two elements of his Second Ukrainian Front to advance on divergent lines. The screen of Cossack cavalry, even though supported by armor, was insufficient to mask the gap, and the German commander rapidly perceived and exploited it.

Operations Around Berlin—April-May, 1945

If one compares the long struggle for Budapest with the comparatively speedy capture of Berlin one is struck by the difference in the time taken to reduce the two cities. The battle in Budapest lasted over two months, whereas from the time the Russians gained their first footholds in the German capital until the city's surrender only 12 days elapsed. It is not correct to say that

**An Cosantóir, Irish Defense Journal.*

in the latter case the Germans fought less well because they knew that they were defeated—probably most Germans had realized this fact even before the Budapest siege. At all events, Berlin was defended with quite as much vigor and sacrifice as the Hungarian city.

The real cause of the difference lay in the Soviet conduct of operations. The Rumanian and Bulgarian surrenders, followed by the rapid occupation of those countries, disorganized the Russian armies. In particular, the lines of communication of the Second and Third Ukrainian Fronts became long and winding, while the advance of the Fourth Ukrainian Front farther north was slowed up by difficult mountain country. As a result Malinovsky and Tolbukhin arrived before Budapest with unexpected speed and without the strategic and logistic support necessary for the rapid reduction of the city.

On the other hand, there was a comparatively long period of preparation before the Red Army Groups on the Oder-Neisse line launched their offensive against Berlin. By the end of January, 1945, the First Ukrainian Front and the First and Second White Russian Fronts had reached the River Oder, and during the first 10 days of February the First Ukrainian Front advanced across the Upper Oder to the Neisse while the First White Russian Front gained bridgeheads north and south of Frankfurt. Here the two armies destined to assault Berlin waited for two months, building up and organizing for the final battle.

By the middle of April the situation in eastern Germany was as follows: Marshal Konev's First Ukrainian Front was on the River Neisse from Forst to Rothenburg, with its left wing stretching back along the northern slopes of the Riesen Mountains. The city of Breslau held out in rear and formed a road block on the supply route. Marshal Zhukov's First White Russian Front lay along the Oder, with bridgeheads west of the river above and below Frankfurt. Marshal Rokossovsky's Second White Russian Front had made further crossings near Stettin.

On the opposite perimeter the Western Allies were nearing the River Elbe, beyond which, by arrangement with the Soviet Government, they could not penetrate. The 21st Army Group was attacking Bremen and Hamburg. The 12th Army Group was almost up to the Elbe at Magdeburg and had reached Leipzig and Bayreuth. The Sixth Army Group was moving southeastward on Nuremburg. Although the Americans were at some points within fifty miles of Berlin, since they dared not cross the Elbe in force *under any circumstances* they cannot be considered to have influenced the battle in any way.[1]

About their capital the Germans had three armies—the Second Panzer and Ninth Armies facing the Russians, the Twelfth Army watching the Elbe upon which the U.S. troops were already closing. In the area of the Riesen Mountains stood another army, in a position to menace the open left flank of Konev's First Ukrainian Front.

The campaign about Berlin divides into three phases, which will be dealt with in sequence. The first phase lasted from April 16th to 26th, and comprised the Soviet strategic moves to surround the city. The second, from April 27th to May 1st, contained the German counter-offensive action. The final phase, May 2nd to 8th, consisted of the withdrawal of the German armies, the surrender of the Berlin garrison, and the capitulation of the entire *Wehrmacht*.

The mission of attacking Berlin was allotted to Zhukov's First White Russian Front, which was to approach the city from east and north. The Second White Russian Front (Rokossovsky) was to clear the Stettin-Neustrelitz area and cover Zhukov's strategic right flank.[2] Konev's First Ukrainian Front covered Zhukov's strategic left flank and to this end was given three difficult tasks; to advance to the Elbe, to assault Berlin from the south, and to cover the long southern flank stretching back from Rothenburg along the Riesen Mountains. Konev was thus given three separate missions, involving movement west, north and south.

As the line of the attacking forces was not continuous each Front was responsible for its own operational flanks.

The first phase of the battle opened on April 16th. Under cover of a heavy artillery barrage, Zhukov's troops crossed the Oder on a 65-mile front. For the first 24 hours the fighting was extremely heavy and the First White Russian Front gained only a few miles, but by April 17th the main defenses were pierced and the Red forces had reached the Wriezen-Seelow area. Frankfurt was by-passed.

In the south Konev pushed his armor across the Neisse and by evening of 17th was before Spremberg. While Zhukov fought his way slowly forward, the armor of the First Ukrainian Front divided into two columns, one making for Bautzen and the other for Berlin. By April 20th Konev's northern tank column was at Jüterbog while the southern reached Kamenz and Bautzen.

On April 21st Zhukov's left wing entered the north-

[1] As early as April 12th, U. S. Ninth Army troops crossed the Elbe south of Magdeburg, where they held a small bridgehead for some days. The First and Ninth U. S. Armies could have continued their advance to Berlin, but the Soviet Supreme Command was determined that they should not, and as this had been agreed at the *Yalta Conference* the bridgehead was withdrawn. The Soviet desire on this point is significant.

[2] The *strategic flank* is that which marks the limit of the operational zone. Thus, although the *Fronts* involved in this campaign were commanded independently, they were acting towards a single objective, and accordingly had no strategic flanks between them. On the other hand, the *Fourth Ukrainian Front*, to the left rear of Konev's Army Group, was engaged in crossing from Poland into Czechoslovakia, and its operations were not connected with the Berlin campaign; both its flanks were strategic.

The *operational flank* is, of course, the immediate flank of any unit or formation. In this case, for instance, Zhukov's operational flanks were at Zehden (north) and the confluence of the Neisse and Oder (south), and he was responsible for their protection from local attack.

eastern suburbs of Berlin. His right was already north of the city. On his line of communications Frankfurt still held out against attack. Two days later the fighting in the suburbs had spread all along eastern Berlin, and the northern arm of the Army Group entered Oranienburg to the northwest of the city. On the 22nd the German General Staff broke up, most of the members leaving Berlin. Colonel-General Jodl took command of the German forces west of the city. Frankfurt fell on the 23rd, thus clearing the supply route and releasing further Russian troops for the main battle.

In the south Konev continued to make rapid progress, his right taking Bautzen on April 21st, his left at Jüterbog being reinforced by the arrival of infantry units. To the left rear, however, the Germans initiated a counter-offensive movement against the line Görlitz-Bautzen. This movement continued for almost the whole of the battle, but the Germans lacked the strength necessary to make any serious impression on the Red forces holding this flank.

Rokossovsky's Second White Russian Front began its attack across the Lower Oder south of Stettin on April 21st, almost a week after Zhukov's attack began. By the next day the leading elements were eighteen miles west of the Oder. For the following four days there were no more spectacular advances here, but on the 25th the offensive against the Second Panzer Army was recommenced.

On April 24th Zhukov's forces in the eastern suburbs of Berlin joined hands with those of Marshal Konev moving up from the south. A considerable portion of the Ninth German Army was thus cut off from the city in the Beeskow area. Northwest of Berlin the First White Russian Front reached Kremmen, severing direct communication between the Second Panzer Army facing Rokossovsky and the garrison in the capital. During the next day the spearhead of the First White Russian Front arrived west of Berlin, while Konev's armor was before Potsdam, had entered Brandenburg, and advanced units almost captured Rathenow, 50 miles west of Berlin, before a local counterattack drove them back. Other units of Konev's Front made contact with the First U.S. Army on the River Elbe, near Torgau.

On April 26th—the last day of this phase—German resistance was stiffened, and at the same time the Red forces slowed down to reorganize. Few Russian gains were made. In Berlin itself the fighting was growing daily fiercer.

The position at the end of the first phase of the battle was not favorable to the Germans. In the north the Second Panzer Army was fully occupied in dealing with the Russian salients west of Stettin. It was now completely cut off from Berlin. The main body of the Ninth German Army was in a pocket southeast of the capital, also cut off from the garrison. The defenses within the city were being battered by Soviet shells and armor. The German troops assaulting Konev's flank on the Görlitz-Bautzen-Kamenz line could make only slow progress and had no hope of achieving the required breakthrough. Had they been able to do so, and cut a corridor either to Beeskow—where the Ninth German Army was—or to Breslau—which still held out—the First Ukrainian Front would itself have been encircled. But the Russians were fighting regardless of losses in men, in material, while the Germans were short of both. In particular the *Wehrmacht* lacked transport and transport fuel.

The second phase of the battle commenced on April 27th. Colonel-General Jodl was now convinced that the Americans would not cross the Elbe,[3] and he accordingly ordered the Twelfth German Army to face about and march to the relief of Berlin. At the same time the Ninth German Army was instructed to break out of its pocket southeast of the city and move westward towards the Twelfth. Some reserves reached Berlin on the same day and the remnants of the Luftwaffe that were still airborne made assaults on Soviet ground forces and armor.

By the next day the Twelfth German Army had reached Beelitz and Treuenbrietzen. The Ninth was moving westwards, but suffered heavily from Russian attacks on all sides. On the south flank of the First Ukrainian Front the German offensive continued to make minor gains north and east of Dresden. In the northern sector the Second Panzer Army was forced back and Rokossovsky reached the line Anklam-Templin.

During the succeeding days the two German Armies struggled towards one another, suffering heavy attacks from the First White Russian and First Ukrainian Fronts. On May 1st the Ninth German Army made a gain of 20 miles and reached Luckenwalde. The Twelfth Army was less than 25 miles away to the west. Some troops from the Berlin area broke out and reached Beelitz. In the northern sector Rokossovsky's offensive continued beyond Griefswald, Neubrandenburg and Neustrelitz and the Second Panzer Army was falling back and being split up into small groups.

On May 1st Hitler's death was announced and the Berlin C.P. closed down. All offensive efforts by the Germans were abandoned. The Berlin garrison still held out, fighting as a rear guard to cover the withdrawal of the Twelfth and Ninth Armies, which were now retracing their steps doggedly to the American zone to surrender. In the south all attempts to break through the wing of the First Ukrainian Front ceased. The final phase of the Berlin battle was reached.

The remnants of the Ninth German Army joined the troops of the Twelfth on May 2nd. During the night they fell back from the line they were holding and on

[3]There is reason to believe that General Jodl was not depending on "deduction" alone for his arrival at this conviction. At all events, practically any American soldier captured on the Elbe line could have given him sufficient information to show how matters stood.

the following two days about 500,000 gave themselves up to the First and Ninth U.S. Armies. In a single day 300,000 German soldiers surrendered to one U.S. Corps alone. Berlin held out until 1500 hours on May 2nd, when the garrison had completed its task of covering the withdrawal, and accordingly the city was then surrendered to the Soviet forces. About 135,000 men were taken in Berlin. On the Baltic coast the Second White Russian Front captured Rostock on May 2nd. Part of the Second Panzer Army managed to reach the British zone to the west; the rest were taken prisoners by the Russians. On May 3rd the Russian troops and the British of the 21st Army Group met. The Red Army and U.S. forces were already facing each other across the Elbe farther to the south.

Breslau continued to hold out on the line of communications of the First Ukrainian Front until May 7th, when the defenders surrendered to Konev's investing force.

By May 5th all German units facing the 21st Army Group (including the Third Panzer, elements of the Twelfth, and the Twenty-first Armies) had surrendered to the British. On May 7th a general surrender was signed at Reims in France, to take effect from 2301 hours on May 8th. This was ratified by a second *Act of Military Surrender* drawn up and signed at Karlhorst, east of Berlin, on May 9th.

The real honors for the success of the Berlin campaign are due to Marshal Konev and his First Ukrainian Front. His was by far the most difficult task, needing very nice judgment to organize and control three different forces on three different missions. He dared to drive a long narrow corridor between two German groups, both of which were still able and willing to fight. He dared to turn the direction of his main effort from westward to northward, at the very moment when his rear was being threatened by an unknown number of hostile units. He balanced the needs of defense in the south with the requrements for attack in the north. He handled armor many miles away from its bases. His winding salient was over 200 miles long and a bare twenty wide. Marshal Zhukov's Army, on the other hand, had a more straightforward task. The frontal assault on Berlin was a costly and tedious operation, but tactically it was a simple one. Superior numbers in men and equipment gained the victory east of the German capital.

The Berlin operations, taken in conjunction with the efforts of the German armies in Czechoslovakia and the Reisen Gebirge, form a dramatic saga. One is reminded of the last years of the *Seven Years War,* when Frederick the Great, fighting on interior lines upon the very same battlefields, successfully held his enemies until one by one they withdrew their forces from the field or turned their attention elsewhere. But the modern successors of the Prussian monarch were not able to do as he had done, and the Russians were not to be diverted from final victory as they had been almost two centuries earlier.

* * *

In so brief a space it has not been possible even to give mention to many of the major campaigns and operations of the Russian war. Those selected owe their position in some cases to their varied interest rather than to any special importance attaching to the results achieved. They may serve, however, as a critical basis upon which to appraise the Russian method in war, either by examination of the qualities and deficiencies of the Red Army, or by comparison with the better-known campaigns of the British and U.S. armies in North Africa, Italy and Western Europe.

The Soviet forces remain something of a mystery. Even the British and American troops in Berlin who have had daily contact with them cannot agree in their judgment upon them. Throughout the four years of war on the Eastern Front the Soviet Union showed itself to have no great trust in its allies. At no time were the British and American *Military Missions* in Moscow given any encouragement to study the Red Army methods or results. What little information *was* released was first carefully sifted, to ensure that it gave no details about the Russian war effort.

The Red Army that was victorious in 1945 was not the same Red Army that faced the German onslaught in 1941 and 1942. The commanders and men had learned much; the technique of war had been tried and proved. In matters of command and staff efficiency there had been the greatest advance, for in this field the Soviet Army originally felt its greatest want. There may still be a long way to go, and many features may still require attention, but on the whole the Russian Supreme Command can feel justifiable confidence in the excellence of its organizational abilities. Errors there will be in any operation, but the incompetence so often spoken of in the Red Army would appear to have been in the main eradicated.

The U.S.S.R. is also in a completely changed position as regards equipment. Not only had Russian factories got under way on a large scale by 1945, but the Russians now possess specimens of most of the German, British and U.S. war equipment that was used during the last six years. Furthermore the war showed the Soviet Supreme Command where it should concentrate in future—and in this connection it is probable that transport and signal material will be the first items on the new Red Army's supply programme.

The U.S.S.R. holds an enviable position today, from the point of view of a state which might be involved in a third World War. Practically speaking, all European territory east of the fifteenth meridian, with the exception of Greece, is in Russian hands or under Russian influence.

The Mules of Mars*

by 1st Lt. Dan L. Thrapp, 2.M.C.

CONCLUSION

To Cut the Burma Road

THINGS got tougher fast. Gone were the more or less pleasant hikes over the dusty flatlands; from here on it was either up or down, and one was as exhausting as the other. Burma's mountains through the Northern Shan States are not overly high—the greatest altitude we reached was something over 7,000 feet—but they are rugged. They somewhat resemble the southern Appalachians in texture. They are clay-covered, and when one scratches through the leafmold and forest debris to the soil, one finds it as red as Alabama clay. It made for easy foxhole digging, but it didn't take much rain or even dew to transform mountain trails to chutes of grease.

The British, during their sixty years' tenure in Burma, have carved some excellent military pack trails through otherwise near-impassable forests and mountains, and when we could follow these trails our difficulties were minimized. However, the troubles of any military operation multiply as the terrain becomes more difficult.

We modified our equipment somewhat to meet new problems. For instance, we added a breast collar to the cargo saddle, and found it invaluable. The pack artillery thought breast collars unnecessary until after the first day in the mountains, when they sent in an emergency requisition for them. We lightened our loads whenever possible, and even used some of the medical evacuation riding mules as pack animals to lessen the burden on the others. At this point we could have used to good advantage some of the little Japanese ponies, which can carry a payload of 150 pounds without difficulty.

Chinese engineers preceded us to the Schweli River, where they built a bridge of bamboo across the wide, swirling, and dangerous waters. The Schweli is comparable to our own Colorado River in many respects, and crossing it is a pretty serious operation. K Company was first over, and a leader let his mule get excited and fall off the bridge with a full load. The animal was immediately swept out of sight and his valuable cargo lost. For a time thereafter we unsaddled the mules and hand-packed the loads and saddles across, repacking on the other side. That slowed operations too much so we fastened the front latigo by pulling it through the cinch ring, then running it back through so that just a fold in the latigo leather held the cinch tight. By this method a leader could hold the halter shank in one hand and the end of the latigo in the other; should the animal fall, the leader could jerk the latigo, letting the saddle slide off, and the freed animal could then easily swim ashore. That system speeded the crossing, and by nightfall everyone was over. We pushed on up into the mountains.

These days were hard on everyone, but weighed most heavily on our packmaster and horseshoers. We had no trained packmaster when we left Myitkyina, and many of our saddles needed "working." The Army pack-saddle is based on two pads, one to ride on either side of the mule. The pads are stuffed with curled hair and shaped to confirm to the animal's body. Sometimes a mule has irregular conformation and the pads then have to be "worked" by adding or withdrawing stuffing to change their shape. Sometimes, too, an animal develops a sore, and the pad must be "chambered," by removing the stuffing from the spot over the sore, so that no pressure is exerted thereon and the mule can still be employed. For the first weeks down the trail I did what saddle working I could, while training a packmaster and saddler. Once in the mountains we were on the move longer hours to cover the allotted day's distance, so we had less time to work saddles and equipment when bivouac was reached, and again everyone who knew how was called upon to help.

The horseshoers, too, put in fantastic hours. Horseshoeing is tough work, even in a shop where a forge is available along with assistants and the proper establishment. But when one must hike all day over the cruelest of terrain, carrying a heavy pack and leading or dragging a sometimes obstinate donkey, and then put in a couple of hours shoeing hard-kicking mules before establishing one's own bivouac, then, indeed, war becomes hell. Quite often, too, it was necessary for the horseshoers to arise early and shoe some mules before starting on the trail in the morning. Because we could not carry a forge or coal, we used light British mule shoes, which could be cut and shaped cold on a light anvil.

We had two shoers and they were good ones, dependable and enthusiastic. Our T/O called for one of

*The Quartermaster Review.

them to be a T/4 and the other a T/5, which was little enough, but what browned us off more than anything was the inability to have them confirmed in even those low ratings, for reasons best known to rear echelon headquarters. One rating finally came in when the campaign was about finished, and the other was confirmed months after we left Burma.

The most important thing in packing a mule is to get his load properly balanced; next in importance is to tie it on so it will stay both balanced and on the mule. For this latter requirement, packers through hundreds of years have developed dozens of "hitches" and variations to hitches. In brief, any hitch is good which will accomplish the end desired, but some are easier to tie, or faster to "throw" and therefore preferable.

Most famous hitches, known to everyone who ever read a western story or hunted big game in the West, are the diamond, the double diamond, and the squaw. Two old Army packmasters developed improved lash ropes to increase the speed and ease with which these hitches can be thrown, and these lash ropes now are issued by the names of their inventors; thus a Nagle rope is used for a speedy squaw hitch, and an adjustable Sweeten rope is issued for use in throwing a fast double diamond. Another invaluable tie for certain occasions is the basket hitch.

Whenever possible I insisted upon the packers learning to tie each important hitch, and learning to tie it fast. Since most ordinary loads can be held by a simple squaw, the men failed for a time to see the importance of learning added hitches, but their efforts paid off when we got into the mountains. A load that would ride satisfactorily over the flat bottomlands with a squaw or a Nagle, would fall off in ten minutes in the mountains, unless tied with a Sweeten or a double diamond. The fact that all animals were led at the slow Infantry gait permitted us to "get away" with simple hitches on many occasions. The attached pack troop, which had relatively simple loads, never used anything but a squaw or a Nagle.

More than a week after we hit the mountains we slipped and skidded down into a hole in the hills called the Mong Wi valley. Some thirty miles to the northeast the Chinese were pounding to death the 300 Japanese remaining at Namkham, but our patrols found no trace of the enemy closer to our valley. We stayed here for about three days before we again turned into the mountains. This time trails were not so good and in some cases disappeared, and the going was rougher than before, but both men and mules were in better shape for mountaineering.

Natives lived on the hog-backed ridges in picturesque bamboo houses, and sometimes within bamboo stockades. Sometimes they paved trails to their alpine villages with huge flagstones, but more often the path to them was clay, packed by the bare feet of dozens of generations of Shans, Likaws, or Kachins. The hill natives had constructed, by an enormous output of labor, extensive systems of rice paddies in virtually every river valley or wherever a streamlet would furnish sufficient water for irrigation. Judged by their works, their engineering skill is considerable; it is an uncommon people who could carve an agricultural living out of such a savage, though beautiful, land.

Whether they approved of us would be difficult to say. They liked our cigarettes, and they were amazed at our mighty mules, and fearful of them. Few Japanese had penetrated into the deeper recesses of the mountains, and we were about all of the war they had seen; probably all they wanted to see.

At any rate they did not hinder us, and they were someone upon whom we could unload K ration biscuits and tinned "delicacies," so from our viewpoint they served a purpose.

We camped briefly at a Burma-Chinese mountain village called Man Hsa Tan, from which we could see the southwestern extremity of Namkham valley, through which, within a few weeks, the first 6x6 over the Ledo Road would roll. Our business was more to the southeast. We picked up an air-drop on a handkerchief-sized clearing hacked out of the forest on the side of a mountain, and took off again for combat. This time we were nearing the Japanese in quantity, for we were approaching the old Burma Road down which the enemy was withdrawing its Salween River forces before the advance of the victorious Chinese.

We scaled a 7,400-foot pass from which, on a gorgeously clear day, we could see the valley of the Burma Road and, beyond it, piled ridge upon ridge, mountains of Yunnan and Indo-China and Thailand. We bivouacked on the east side of the pass and from here our approach march commenced.

A detailed map of east Burma would show two towns named Mong Yu, about thirty miles apart on the Burma Road north of Lashio. One of them, the northernmost one, is where the Burma and Ledo roads meet; the other is just north of Kutkai. Under our plan of operation a Chinese regiment was to establish a road block at the northern Mong Yu and we were to establish one somewhere near the southern one. The spot selected for our block was just south of a village called Nampakkha, some four miles north of the southern Mong Yu. Three hills were selected as offering positions from which our mortars and artillery could fire upon road traffic, and one battalion was assigned the task of occupying each hill. It was planned that the 124th Cavalry would reach the vicinity within several days and take up positions to the north of the 475th and eventually occupy Nampakkha itself. Half encircled by our positions and those the 124th was to occupy was a long, serpentine valley of rice paddies, which would serve as an immense drop field.

There are two dirt roads which join the Burma asphalt highway from the west, one reaching the town

of Southern Mong Yu and the other Nampakkha. The Japanese apparently expected us to approach over one or the other of these roads, and established blocks on both of them. Unknown to us at the time, the area immediately before the second and third battalion hills, between the hills and the Road, was an extensive Japanese depot and maintenance-shop location, and the enemy was determined to hold it.

The plan of attack called for the first battalion, first, seizing a hill on the southwestern border of the which included "old Marauder" veterans, to strike valley. The second and third battalions would slip through first battalion positions and down into the valley under cover of darkness. They would attack across the paddies and try to sweep their hill objectives on the east side of the valley at dawn on the following morning.

Our approach march extended over two of the toughest days of mountaineering we had struck. They were difficult for the men, but almost unendurable for the mules. Men could slip off their packs at any halt, but not the animals. At one time, Japanese-sympathizing natives caused the column to take the wrong trail, and the battalion was forced to skid and scramble over the mountains as it carved out a path of its own; the mules were under load for more than nineteen hours at a stretch. Much of it was due to an unavoidable situation and it was impossible to unpack the animals or give them the benefit of the lengthy halts to rest or graze. The order had been: "This is the mission. It must be accomplished if it takes every animal we have. Don't jeopardize our success by sparing the mules."

We had started, that first day, before dawn, and we still were slipping and sliding and bumping into the man or mule ahead, and cursing Burma, the Japanese, and a steady, soaking drizzle, well into the early hours of the following morning. Because the mules were exhausted and thirsty, they were unsteady on their feet. Our battalion lost seventeen of them over the side of the mountain that day and night. Some of them were recovered later. Others broke their necks or were never found again. Sometimes, during the quiet of the night, one could hear an animal roll and stop and roll and roll some more for minutes down the mountainside. The softly muttered curses of the GIs who scrambled down through the pitch darkness after lost mules were eloquent and, on a pleasanter occasion, would have been a delight to hear.

Eventually the whisper came back, "bivouac," and unseen hands guided us off to one side, to a field, where we could unsaddle and feed the donkeys and catch a little sleep.

The march resumed at daylight and once again, though the distance covered was short, interminable waits compelled the animals to be under load for long hours. Ahead we could sometimes hear the slap of grenades or the rattle of machine guns as the first battalion burned out a village and occupied the hill it was assigned. After hours of creeping advance and tedious waits, we arrived at the ruins of the village, where still-smouldering *bashas* provided enough heat to make coffee and warm C rations. We waited until darkness before descending into the valley.

During the interval air transports began to come in. They formed an unending procession, droning round and round the forested hilltop, and each time they passed over first battalion positions, they dropped parachutes of ammunition, food, and forage. Ordnance parachutes, unlike the white cotton ones used to lower rations, were of beautifully colored rayon: red, blue, green, yellow, white. Originally the color of the parachute indicated the type of article dropped, but that system had long been abandoned. Some days later a Japanese was captured on the slopes of this same hill. In a notebook in his pocket he had painstakingly and accurately totalled the number of parachutes of the various colors dropped, but we never learned what conclusions he had reached about them. It was at this time that the Tokyo radio announced that Allied paratroopers were landing in Burma. It was days before they realized we hadn't fluttered in on colored parachutes; we hiked in with Quartermaster mules.

The descent to the valley floor was uneventful, so far as enemy action was concerned, though a GI carelessly dropped a grenade, killed himself and wounded two comrades during the climb down.

The battalion pulled into a draw on the west side of the valley and bivouacked until an hour before daylight, while the I and R platoon of headquarters company scouted the vicinity. The valley at this point was perhaps a quarter of a mile wide; the hill on the east side, which was the battalion objective, rose about 800 feet above the rice paddies. The hill was a horseshoe-shaped mound, with the rounded "toe" facing east toward the Burma Road and the heels back toward the valley we were in. A deep draw nearly severed the hill, separating the heels and having its source in a cirque almost against the forward slope.

K and L companies, starting before daylight, worked their way up over the heels of the hill, while a couple of platoons of I company moved down the Nampakkha dirt road until they hit the Japanese road block, suffering some casualties. By an hour after daylight the hill itself was secure, and headquarters company mortars and heavy machine guns crossed the valley and established themselves. A well-hidden Nambu challenged them in the valley, but caused no losses.

Once the hill was secured, the rest of headquarters company and battalion headquarters crossed the valley to the hill. Headquarters was established in the cirque near its top, and mule picket lines were set up below the cirque in the draw leading to the valley. Dispersal was not possible under the conditions prevailing, although the mules were strung as far down the draw as

possible, and under what protection the steep hillsides offered.

Meantime a perimeter was established around the forward rim of the hill by the rifle companies, and the 81's were being dug in and set up to command the blacktop highway, 2,000 yards to the east. From the top of the hill one could see a stretch of perhaps 1,000 yards of the road; men of the third battalion became the first Allied soldiers since 1942 to see the Road in Burma from the ground. But there wasn't much time for sight-seeing. The Japanese would shortly come around and there was work to be done.

Transports thundered in by the score overhead, and supplies floated down under clouds of parachutes. Every available animal and packer was sent out on to the valley floor to bring the stuff in. The Japanese couldn't pass up an opportunity like that.

From the hills to the north of our position, on the other side of the Nampakkha road, they began sniping with 75's at the mules and men exposed on the valley floor. Enemy riflemen fired continually at the unarmored transports floating by overhead, and reportedly caused some casualties.

The men on the drop field were getting it rough. Each time two or three soldiers or mules would get together, a shell would whip in, and enemy fire was fairly accurate. Occasionally a mule would be knocked out, and the men suffered some casualties, but the work never lagged and an unending procession of ammunition and rations wended its way up the draw and was cached or fed out to the riflemen on top of the hill. Earth walls holding the paddy terraces served as pretty good protection for men on the field, and casualties were much lighter than we had reason to hope for.

Back on the hill during the daylight hours, things were pretty quiet. Occasionally a party of Nips would slip through the woods with a knee mortar and experimentally drop a shell in here and there, but on the whole the battalion was free to dig itself in and prepare for the coming attacks. That was satisfactory to our side.

Men and animals were called off the drop field at dusk. The first enemy attack, striking at the northeast slope of the hill, was delivered about forty-five minutes afterward. It was unsuccessful. Two other assaults were launched during the night, but they were equally futile, and daylight found our positions intact.

Packers and mules again were worked daylong, clearing the drop field, but enemy artillery fire was considerably lessened from the previous day's. However, stray Japanese continued to drop mortar shells into the draw which held the picket lines, and before nightfall the lines were moved over against the north side of the cut, and the animals dispersed as much as the geography of the place permitted. It was good that this was done.

Hardly had darkness set in before the enemy began a mortar barrage which raged up and down the draw all night and until half an hour before daylight came. Knee mortars and 90-mm. mortars whistled in hour after hour, and it seemed as though every square yard of the floor of the ravine was blanketed by explosions. There was a three-quarter moon that night. From a foxhole on the side of the draw one could see in the moonlight a continuous haze of dust, spotted here and there by flashing explosions, like an electric sign going off and on. Below and to the right, Kachins on perimeter at the mouth of the draw sent streams of tracers into a hedgerow which served as a gate to separate the draw from the valley proper.

No Japanese penetrated our perimeter that night, but enemy explosives rained on us until after dawn.

The mules suffered most. Picket lines were snapped by mortar shells, and occasionally in the lurid light of that Burma moon we could see animals going down, or sometimes we could hear heavily wounded mules staggering and falling into abandoned foxholes. The ravine that night earned its sobriquet of "Dead Mule Gulch."

Twenty-one mules were killed outright or died of wounds as a result of the night's action. Casualties were caused because we could not disperse the animals properly, and also because the enemy concentrated his fire upon the ravine, which they suspected to be the site of headquarters; it was, but Japanese fire didn't get high enough up the gulch.

Once was enough. Mules were too hard to replace in the CBI, and when the Colonel surveyed the damage next morning he ordered most of the animals withdrawn across the valley to the draw from which our original attack was launched. We were to establish our own perimeter there and maintain periodic contact with the battalion by radio. One platoon of the 35th, and about ten mules of battalion headquarters, were to remain on the hill to perform supply duties. The other mules, across the valley now, were to join the rifle company animals in daily clearing the drop field and whatever other packing needed to be done. We established a semi-permanent bivouac and settled into routine pack-troop work.

Every day was pretty much the same. At first the enemy had the drop field under direct observation, and harassing fire with artillery was something to be endured as a matter of course. After three or four days the 124th Cavalry arrived from the northwest and stormed a series of ridges east of the northern end of the valley, securing the left flank of the third battalion and eliminating enemy artillery fire from that direction. From then on, his fire became more a nuisance than a threat, although it still occasionally caused casualties. Once in a while a little Japanese whippet tank would slip into position behind a cut-bank on the Burma Road and snap a few high velocity 40-mm. shells at the crest of the battalion hill, attempting to silence a 4.2 mortar we were using to cover the road. These high speed shells normally would just miss the hill, exploding on the drop

field behind it.

The Japanese had a little the better of us in artillery. One battalion of our pack howitzers was located on the first battalion hill, in a position overlooking the Road, and much of the enemy-held territory on either side of it. The enemy made strenuous attempts to silence this artillery, and did do it some damage, using a 150-mm. piece which far outranged our 75's. Our bivouac was underneath the path of the shells. Day after day we could hear the whistle of the 75's spinning out to the Road; and almost as surely as we would identify them, we could hear the slow, rolling whoosh of the giant 150 barrelling up to visit our batteries.

Roughest time was had by the second battalion, which had dug in on a hogback ridge confronting the enemy in prepared positions on a higher elevation of the same ridge. Day after day the enemy poured fire into the exposed second battalion, causing numerous casualties. When a battalion is hurting thus, its supply units hurt too. For two weeks packers and mules had to bring in supplies under sniper fire and, at times, under direct enemy observation.

Tales told about the animals were numerous and, in some cases, possibly true. There was the story of one donkey which fell off the rim of a bluff and rolled into Japanese positions. He scrambled to his feet and bucked and kicked his way back to American lines.

Then there was the tale of the Japanese who captured a loose mule, using the animal for a front, attempted to sneak inside the allied perimeter. He was doing all right and might have made it had he not become impatient and attempted to urge his mule to greater speed: he poked the animal in the rear with a bayonet. Mules don't like that.

Another story told of a packer leading his mule across the drop field while transports roared overhead. Suddenly the mule wheeled and the packer clinging to the halter shank, was swung some ten feet to one side just as a shell landed where he had been walking. Despite the racket of the airplanes, the mule had heard or felt the shell coming and whirled in time to avoid the explosion.

The rumor that mules can tell where mines or booby traps are laid, and avoid them, was effectively quashed the day an officer from the 31st Pack Troop was blown off his animal by a booby trap his riding mule had tripped. I do not doubt that a mule could be trained to avoid the more obvious traps, and possibly to avoid stepping on mines. Wild animals learn to avoid cunningly concealed steel traps, sometimes buried with all the ingenuity experienced, intelligent trappers are capable of employing. And a mule, in my opinion, doesn't have to hand any wild animal that ever lived anything for intelligence. It would be an interesting experiment to train one.

For three weeks the fighting at Nampakkha continued, but in that time the Japanese retook not a single inch of ground they had lost. Early in February the first elements of the Chinese Salween Army pushed down to make contact with us, and the enemy gradually withdrew through Kutkai and Hsenwi to Lashio and beyond. Our Burma fighting was over. During the campaign we had given Quartermaster pack equipment as rugged a test as it ever is likely to get. In general it proved to be very good equipment indeed. Even excellent equipment, however, can ofttimes be improved. But that has no place here.

There is more to the story, of course. There always is. But mostly it's the part you tell around the cracker barrel in the winters to come.

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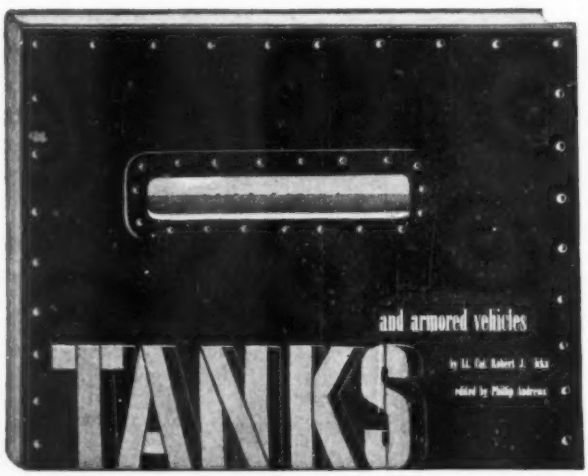

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Editorial Comment

The following letter addressed to the editor of *The Chronicle,* a horse magazine published at Middleburg, Virginia, is reprinted here because we believe it is worthy of consideration:

Horseman's Duty

Gentlemen:

Your editorial of December 13 is most timely. It points out quite plainly the duty of our horse-using population. It is true that the children of tomorrow, and the grownups as well, cannot know anything of the value or the need of horsemastership, or the importance of improving the breed of horses, unless their elders provide means for the use of the horse under a proper guidance. In these things the Horse Cavalry has been of assistance. Our Horse Cavalry cannot be of further aid, however, for the reason that we now have no Horse Cavalry.

Indeed, it is gratifying to know that there are those who acknowledge that the passing of the Horse Cavalry will leave a void that will be hard to fill. As time goes on, it may be that there will be many others to wonder at a policy that would permit the use of funds for publishing subjects as devoid of public value as the love life of insects and deny maintenance of a branch of the Army that may be called upon to insure our National existence. Many of us hoped that Congress would take an interest in the future of Horse Cavalry; that General Herr might be called upon for evidence of the value of Cavalry, even in World War II. It may be that this will yet come to pass. But his words of warning, to which you call attention, indicate that this hope may be a futile one. You are correct in saying that the duty of the American Horseman embraces a large obligation. He may be called upon—as a Cavalryman—in National Emergency, too.

It does seem that for the moment the horse must be thought of as being for use in polo, hunting and in racing. The last named is fast moving into strictly a commercial enterprise. Yet, it is thought that General Herr had a larger interest in announcing his warning. He must think, as do many other horse cavalrymen, that this Country may need horse soldiers—and may need them urgently. Since the Army has disavowed any intention to insure an equipped and trained horse cavalry personnel of mounts and men, the plea has been directed to the horsemen of this Country to carry on. It may be that interested citizens will re-establish troops of Cavalry in various places. Forty years ago, there was such a troop in nearly every state. If this obligation is accepted, it is quite possible that the thanks of the entire Country may be theirs. God forbid an invasion by an enemy in any form. But if such calamity comes to pass, we must look outside of our Regular Military Establishment for Horse Cavalry.

Today, December 22, the daily press carried the announcement that Senator Wiley of Wisconsin has expressed concern on the succession of those charged with heading our Government in the event the entire group named in the Constitution as successors to the Presidency are wiped out, say by Atom Bomb, when they are assembled in Washington. He says, "In this Atomic Age, we cannot delay making provision for whatever emergency may arise." We find agreement with the Senator. This would be a terrible situation. And we wonder why our lawmakers do not think deeper yet and, in addition, give thought as to what could happen to the entire Country in case this terrible weapon is let loose on us.

The cost of maintaining horse cavalry is insignificant compared to the saving that could be attained on elimination of useless expenditures. The presence of the horse and association with him insured *esprit,* a boldness, a necessity for physical fitness and quick thinking that has paid off immeasurably more than the cost in dollars for maintaining cavalry. The testimony of Patton, Lucas and Truscott, within itself, is reliable enough in pointing out our lack of judgment in not employing American trained and American horse-mounted Cavalry in Italy. Our common knowledge is ample on the use of cavalry by the Russians.

It may not be amiss for your readers to know what the late Billy Mitchell had to say about the horse in the Army. We always considered him a branch protagonist of the first flight. But he would not have advocated the elimination of the horse in our Army. He was a good horseman. He rode fox hunting, and did some steeplecasing, too. . . .

Undoubtedly, Billy would agree about the Cavalry being useful in our own Country to protect Citizens from those that won't be worthy of such classification who turn to looting, etc., when a bomb comes, and if it proves as terrible as we are led to believe, destroying pipe lines, mines, highways, railroads, telegraph and telephone lines, and havoc is the result. We agree with Senator Wiley. These things should be thought of now. We will have a great need for protection against some of our own people and the enemy. We will have the Infantryman. But is there anything that can be superior to Horse Cavalry in such disaster!

JOHN F. WALL,
Colonel of Cavalry, Retired.

Armored Division Associations

1st Cavalry Division

MAJOR GENERAL WILLIAM C. CHASE, commanding general of the First Cavalry Division in Japan, writes the following letter to all former members of the Division:

"I want to extend this message to all former troopers and officers of the famous First Cavalry Division, which is now doing occupation duty in Tokyo.

"Not so long ago, many of you returned to the States, some to civilian life, and some to enjoy a pleasant furlough at home before joining a Regular Army outfit. To those of you who have tasted civilian life and found it not quite what you expected, let me extend an invitation to reenlist in your old outfit, the famous First Cavalry Division.

"By enlisting, you can insure good health, security and friendly companionship. You can also get the many benefits offered to those who will serve for three years. If you do decide to enlist, see the nearest Recruiting Officer and be su.e to specify your branch as Cavalry, and your theater as the occupation of Japan. Request that you be assigned to this Division.

"The commanding general of the Eighth Army, Lieutenant General Robert C. Eichelberger, has assured me that he will see that all who request it are assigned to the First Cavalry Division.

"The First Cavalry Division needs veterans like you and has a good job waiting for you. Many top vacancies are available, especially for the 'old-timers' who served as NCOs.

"My warmest regards,

WILLIAM C. CHASE,
Major General, U. S. Army,
Commanding."

Hal R. Kilburn, 956 Menlo Avenue, Los Angeles, California, is anxious to contact former buddies in the First Medical Squadron.

Seven of the main camps occupied by troops of the First Cavalry Division in Japan are named in honor of Americans who died heroes' deaths in World War II, it has been disclosed in a recent public relations press release.

Camp Drake, headquarters of the Division, is named after Colonel Royce A. Drake, who was killed October 21, 1944, on Leyte, Philippine Islands, just one day after the Philippines invasion. He was the first officer in the Division to receive the Silver Star in the Leyte campaign. It was awarded posthumously.

Camp McGill, where units of the Fifth Cavalry Regiment are stationed, is named for Sergeant Troy A. McGill, the only First Cavalry Division soldier to win

the Congressional Medal of Honor in World War II. He was credited with killing more than 60 Japs during the Admiralty campaign.

Camp Palmer, occupied by troops of the Second Brigade, was named after Private Nelson D. Palmer, who was killed April 3, 1945, in the Philippines.

Camp King, also occupied by troops of the Second Brigade, is named after Lieutenant Colonel Raymond F. King, of Headquarters, First Squadron, Eighth Cavalry Regiment. Colonel King was killed in action at Mount Malopunyo, Luzon, on April 22, 1945.

Troops of the First Cavalry Division's Artillery occupy Camp Bender, Drew and Whittington.

Camp Bender derived its name from the heroism of Colonel Bender (initials unavailable), one-time regimental commander of the 387th Infantry Regiment of the 97th Infantry Division. Colonel Bender was killed in action in Europe while serving with the Ninth Division.

Camp Drew is named after Private Edwin P. Drew, a soldier of Battery B, 271st Field Artillery Battalion, who was killed in action by machine-gun fire at the Army and Navy Officer Club in Manila, February 21, 1945.

Camp Whittington is named for Private First Class Jefton C. Whittington of Battery A, 82d Field Artillery Battalion, who lost his life in action on Luzon in the Philippines, March 10, 1945. He was awarded the Silver Star posthumously.

The First Cavalry Division's Band is kept busy these days traveling all over the Japanese islands of Kyushu, Honshu and Hokkaido, playing at military installations and ceremonies for Allied troops everywhere.

1st Armored Division

BEFORE the 1st Armored Division was inactivated, a large number of its officers and men, who served in the Division overseas, organized the 1st Armored Division Historical Association.

The present trustees are: Lieutenant Colonel Loren D. Buttolph, Assistant AGF Liaison Officer, SEPE, Seattle, Washington; Major Alfred K. Lee, Office of the Staff Judge Advocate, Headquarters 9th Infantry Division, APO 9, c/o Postmaster, New York City, New York; and Chief Warrant Officer Frederick L. Kinney, whose present address is unknown.

The trustees have designated Colonel C. C. Benson as their representative for the receipt of historical records of the 1st Armored Division. Three boxes of these records, including a list of some 20,000 former members of the Division, have been located by Lieutenant Colonel William L. Wells in storage at Fort Knox, Kentucky. Major General John W. Leonard, Commanding General of Fort Knox, has been requested to send these records to Washington, D. C., where they will be consolidated with other 1st Armored Division historical records now in the files of The Adjutant General.

The Adjutant General files now contain approximately 12 filing cabinet drawers full of 1st Armored Division historical records, which are nicely arranged by unit, chronologically within units. Practically all of these documents that were formerly classified as "Secret" or "Confidential" have been declassified and are now available for historical research.

Unfortunately, large gaps exist in these records, particularly with reference to operations in North Africa. Colonel Benson appeals to former members of the Division to send to him such orders, reports, operations maps and photographs as they may now have in their personal possession. He will have them placed in the official A. G. files, where they belong and must be if they are to serve any useful purpose.

Division commanders, staff officers, warrant officers, master sergeants, tech sergeants, staff sergeants, operations personnel and many others, have a habit of collecting "souvenirs"—often original signed documents pertaining to some important operation. So long as these "souvenirs" remain in the hands of scattered individuals, they are practically useless. If concentrated in the well-arranged files of The Adjutant General, they would provide valuable source material for the history of the 1st Armored Division. Colonel Benson requests all former members of the 1st Armored Division, who have such documents, to send them to him, c/o World War I Branch, Historical Division, War Department Special Staff, Building 21-A, Army War College, Washington, D. C. He will see to it that all official historical records of the 1st Armored Division sent to him are embodied in A. G. files where one and sundry can refer to them.

As to 1st Armored Division photographs for the historical record, Colonel Benson states that six months ago the official Signal Corps volume on the 1st Armored Division contained about 20 pictures, among which Verne Pritchard and Honk Allen were well represented. None of Orlando Ward, Ernie Harmon or various others who had a lot to do with the operations of the 1st Armored Division, and none to show combat operations. These pictures, many without unit identifications, were then filed according to geographical areas rather than by organization. Thanks largely to the efforts of Colonel Henry E. Gardiner, DSC, former commander of the 2d Battalion, 13th Armored Regiment and subsequently commander of the reorganized 13th Tank Battalion (present address 25 Broadway, New York City 4, New York), there are now some 350 pictures in the 1st Armored Division volumes of the Signal Corps. Colonel Benson says, "We need many more, official and unofficial, with names, dates, places. One good picture, with an accurate caption, is worth twenty pages of records." He appeals to those who served overseas with the 1st Armored Division to send him photographs, particularly those which show units or individuals of the 1st Armored Division in action.

2d Armored Division

THE Second Armored Division Association has received an enlarged action photograph of a tank and crew of the Division entering Magdeburg, Germany, the last objective of the Second Armored in the war. The picture and the accompanying letter from General Jacob L. Devers, Army Ground Forces commander, have been framed for hanging in the Association's meeting room. At the present time, however, and until a meeting room is established, picture and letter will hang in the office of the present Division commander, Major General Leland S. Hobbs.

The following extracts are quoted from General Devers' letter:

"From the wall of the Association's meeting room, the photograph should remind your members of their individual and collective contributions to the successful conclusion of the war. I know they are proud of their service, especially of such feats as include the battles of Sicily, the St. Lo offensive, being the first American

troops into Belgium, the breaching of the vaunted Siegfried Line, the Battle of the Bulge, the Ardennes offensive, and finally the triumphant entry into Berlin. . . . Men who served valiantly in war will, I know, continue to serve their country in peace and to maintain their interest in military affairs and in the security of our country."

Captain George Warren, secretary-treasurer of the Association, announced just before Christmas that applications for membership in the Association were still arriving daily. Former members of the Second Armored, even though not interested themselves, are urged to acquaint friends of theirs who were with the Division of the Association and have them get in touch with Captain George Warren, Hq. CC "A," Second Armored Division, Camp Hood, Texas.

At the same time that he made the above announcement Captain Warren also announced that the Publisher, Albert Love Enterprises, Box 5109, Atlanta, Georgia, still has a limited number of copies of the Second Armored History, which was recently distributed to those whose orders had been placed on the advanced sales list.

5th Armored Division

THE news of the formation of the Fifth Armored Division Association has been greeted with enthusiasm in all quarters. Many letters are being received and names and addresses are being added at a rapid rate. Some rosters, however, have not yet been received but they are expected in the near future.

It is estimated that the files of Division members and their addresses will be almost completed by March at which time the first issue of a quarterly *Fifth Armored Division Journal* will be issued.

In some cities local chapters are being formed on an informal basis. One of these is in Jersey City and vicinity and is headed by William Toffey, formerly of Division Headquarters. This group meets about once a month for a social evening. These local chapters are encouraged as a means of disseminating information and providing a framework for the Division Association in the future.

Of interest to former members of the 81st Tank Battalion is the news that this Battalion's history is now in the hands of the publisher.

7th Armored Division

JOSEPH A. REDDY, JR., general manager of the 7th Armored Division Association, writes from the national headquarters of the Association at Libertyville, Illinois:

". . . We certainly would appreciate mention in your JOURNAL. Perhaps, as a starter, we might run the note that inquiries about the Association can be forwarded to me at P. O. Box 333, Libertyville, Illinois. Also, that in six months of operation we have gained nearly 400 members and that we are planning a really ambitious program for the coming year. We, the division, that is, have two Medal of Honor winners—Sergeant Thomas Kelly, a medic from Brooklyn; and, more recently, Sergeant Robert H. Dietz, Kingston, New York. The latter was a posthumous award. I believe that there are few armored divisions with two such winners. We are taking steps to have some terrain feature in the vicinity of Dietz' former home re-named for him in his and the division's honor. A report to the membership has just gone out and we hope very soon to put out a small newspaper."

8th Armored Division

BRIGADIER GENERAL JOHN M. DEVINE, commanding general of the 8th Armored Division from September 1944, to the inactivation of the Division in August 1945, has joined the Army Ground Forces Universal Military Training Experimental Unit at Fort Knox, Ky., to lead the War Department test unit on its UMT plan. On his staff is another former 8th Armored officer, Captain John P. Stafford, Jr., who served with the 8th from March 1942 to December 1943.

Another former 8th Armored man, also at Fort Knox with The Armored School, Lieutenant Colonel E. R. White, has been named acting secretary of the nuclear 8th Armored Division Association. Former members of the 8th, both those still in service and those now separated, are urged to register their names, addresses and pertinent information as to their present occupation with Colonel White at The Armored School, Extension Course Department, Fort Knox, Ky.

9th Armored Division

THE first informal party was held by the 9th Armored Division Association at the Hunt Club, Fort Knox, Kentucky, on the night of 14 December 1946.

Plans for the actual organization were approved. A picture of the Ludendorff Bridge, sent to the Acting Secretary of the Association by General Jacob L. Devers, was displayed and observed with enthusiasm by all present. Plans for future meetings were discussed but were left in a tentative status depending on the progress of the organization of the association in the next few months.

Major General and Mrs. Leonard headed the guest list. Others present were: Colonel and Mrs. Adams (G-4); Colonel and Mrs. Engeman (CO, 14th Tank Battalion); Major and Mrs. Dennis (S-3, 19th Tank Battalion); Major and Mrs. King (2d Armored Regiment); Major and Mrs. Roberts (14th Tank Battalion);

Captain and Mrs. Meier; Captain and Mrs. Wilton J. Sherman; and Captain and Mrs. Gelling. Mr. and Mrs. Floyd D. Harder (60th Infantry Battalion); Mr. and Mrs. Ralph A. Castillo (19th Tank Battalion); and Mr. and Mrs. Walter J. Sherman (3d FA Battalion); all of whom are from Louisville, Kentucky, also attended. Mr. O. W. Harmon (Division Headquarters) who happened to be in Louisville on business from New Tazewell, Tennessee, was the only really 'out-of-towner' present at the first meeting.

Captain Louis Gelling, Acting Secretary of the Association, is still anxious to contact former members, and in particular company and unit commanders of the 9th Armored Division, and may be reached at Headquarters The Armored Center, Fort Knox, Kentucky.

* * *

11th Armored Division

WE want to thank the members of the Association for the swell response to our Newsletter with their comments and suggestions, which have been pouring into the Association offices. For the benefit of those of you who may not have seen it, we reprint below the Belgian message of thanks to the men of the Eleventh, which was received by Ted Cronyn, president of the association:

"Bastogne, July 4, 1946.

"Dear Friends:

"On this anniversary of your Independence Day the Belgian people have met in Bastogne—which symbolizes the wonderful stand put up by the American Army in Belgium—in order to pay to the United States of America a tribute of gratitude and affection.

"Our representatives will lay the cornerstone of a memorial in honor of your Armed Forces, and a plane will take off to Washington to bring to the Capitol earth from the Ardennes, sanctified by American blood.

"We desire to congratulate you as one of these boys who fought so gallantly in the battle of the Ardennes, for our liberation and we send you our best regards and our everlasting appreciation of your help."

(Signed by the Mayor of Bastogne).

Many of you have written letters to us, asking the addresses of former buddies, which we have not answered yet because we want to check our files for corrections before sending you the information you want. We have had quite a few of our letters returned due to the fact that either we did not have the latest address or the person had moved and left no forwarding address.

We visited Cpl. Stanley A. Nelson of the 492d AFA, shortly before Christmas at Forest Glen, Md. Cpl. Nelson is a veteran of both world wars and was wounded about the first day of action in Bastogne. We would like to hear from all of our members who were wounded in action and we want to be sure they are being taken care of properly.

Ernest A. Perlmuter of Cleveland, Ohio, writes us that he is interested in forming a local chapter in Ohio which might include Akron and Canton as well as other near-by cities. We read that Theodore King was elected Secretary of the Woodmont (Conn.) Fire Company. Stoddard L. Ogg was separated from the service after 23 months of hospitalization on December 11th. Guy R. Moats of Boonsboro, Md. wants to get ahold of about 20 sleeve patches to complete a quilt that he wants to display at the Convention next August. Chaplain (Capt.) David E. Kinsler, who hopes for a commission in the Regular Army, writes us from Fort Knox that he will try to send us quite a few addresses of members of the 11th who are still in the service. Marvin Garfield writes that he soon hopes to leave the Vets Hospital in Minneapolis and is interested in forming a local chapter in that city. We were pleased to know that 16 former members of Co. "C" of the 63d AIB have formed a club, with Philip Mildenberger of Tenafly, N. J. as Secretary. Paul E. Cratty of Roxbury, Mass., is very keen on organizing a chapter in Boston and hopes to make the "Beantown" chapter the biggest and best.

A letter from Johnny Gibson of Division Trains, tells us that he is back playing professional baseball with the Cardinals' Rochester, N. Y. club and hopes to be able to attend the convention in Chicago. Charles J. Hocker of Philadelphia, Pa. writes that his "newsletter" was really his Christmas present from the 11th A.D. Ass'n and he obligingly sent us quite a few names and addresses of former members of the 21st AIB. R. L. Schneider of Chicago (41st Cav.) thinks many of the members would be interested in exchanging pictures taken overseas and he is interested in your comments on this idea.

Speaking of local chapters, practically all members who have replied to our newsletter are very much in favor of such an idea. If a couple of you "go-getters" in each city would get together—we can send you a list of names to contact in that vicinity. Incidentally, this list would contain the names of those who sent in our newsletter coupon—so they must be interested. For the benefit of all of you who have asked—wives will be permitted to attend the convention in Chicago, of course, and we will try to arrange something of interest for them while the actual business meetings are taking place.

Ralph Holzwarth of Syracuse, N. Y. says that he will be glad to offer his assistance in getting publicity for the Association in some of the New York papers. Mrs. Norma M. Chadwick very kindly sent us the *Song of the Armored Division* written by her and dedicated to her son, Pfc. Stanley K. Chadwick, who was reported killed in Belgium in January 1945. Mrs. Olas Wilson of Eldon, Mo. (who was widowed on Dec. 10, 1946) writes that she is interested in having both the ETO booklet and the Division History so her two daughters can learn all about their Daddy's outfit. Mrs. Virgil

Taylor of Cadiz, Ohio, mother of Thos. J. Taylor who was fatally injured in an accident August 30th also wants the History, as do Mr. and Mrs. W. J. Johnson of Ardora, Pa., parents of Wilber F. Johnson, who was killed in action. Mrs. Joseph Mitchell of Denver, Colo. mother of Major William E. Mitchell (21st AIB) who was killed in action April 1945, would like to get in touch with anyone who knew her son. Mrs. Frank L. McIntyre, Sr. of Rochester, N. Y. the mother of Frank L. McIntyre (41st Tank) who was killed in Burgbrohl, Germany on March 9th, 1945, would like to correspond with anyone who knew her son.

We have ordered quite a number of windshield stickers with the 11th A.D. insignia advertising the convention in Chicago for members of the Division. We hope to have some news about Lapel pins for those who want them, in the near future.

We have received many, many more letters of congratulations and good wishes for the Association, too numerous to mention and list individually, but we thank all of you for your enthusiasm.

Speaking of mail being returned to us—does anyone know the addresses of the following members?

Philip Santanello Chester J. Prendota James C. McKnight	21st AIB	Orrin E. Hunt Ansel C. Stackpole Henry K. Hunter	63d AIB
Frank E. Learned Troy C. Lee James C. McMullen Milton R. Roth	81st MED.	Rudolph L. Scarboro Edmund C. Garrabrant Edward A. Nelson Russell L. Baker	41st TANK

William P. Adams — Joseph J. Medek — Charles W. Quillen—42d Tank

We still have not received any rosters for the 133d or the 492 AFA—however, we have received a few names and addresses and hope to get the rosters through these members. We also want you members of the Association to send us any items of news and interest to other members to be published in this column.

The ARMORED CAVALRY JOURNAL wishes to thank the members of the Association who have sent in subscriptions to the JOURNAL.

14th Armored Division

A LETTER outlining the plans for the Association and a personal questionnaire will be mailed to all former members of the Division whose address is available within a few days.

All former members of the Division will be interested to know that the official Seventh Army Report of Operations has been released. This report is made up with maps and photographs in three large volumes. It is a comprehensive tactical study compiled from official records. The role of the 14th Armored Division in the drive through Alsace and Southern Germany is reported along with other operational divisions. It is also interesting to know that the Division history, while out of print, is still in demand. Joe Carter, now employed by the *New York Herald Tribune* and doing some writing for the *New Yorker* on the side, reports that he has requests from the Imperial War Museum, London, the Tactics Library, United States Military Academy, the Tactics Library, The Infantry School, and many former members of the Division. It is hoped that the Association can procure at least 1,500 orders in order to warrant reprinting. In the meantime, a number of our men who were wounded at Hatten and who are still in the hospital want copies—do you have an extra one?

Colonel M. K. "Bullets" Kurtz, now assigned to the Field Artillery School, Fort Sill, Oklahoma, is collecting all types of historical information pertaining to the Division. If you have any information that would be of value to this collection please address him. It may be well to elect him Association historian.

General Smith was recently in San Francisco on emergency leave on account of the illness of Mrs. Smith. Her conditions was good as of the last report.

16th Armored Division

PLANS for the publication of a 16th Armored Division Newsletter have been announced by MacArthur H. Manchester, division association secretary. The Newsletter will contain news and information of former division personnel and it is requested that all material for the publication be forwarded to the secretary at this Washington D. C., office, 2517 Connecticut Avenue, N.W.

20th Armored Division

KRIS GILBERTSON is secretary of the 20th Armored Division Association and requests that all inquiries about the association be addressed to him in care of *The Rhinelander Daily News,* Rhinelander, Wisconsin.

In his recent letter to the ARMORED CAVALRY JOURNAL he writes: "Yes, I am the secretary of the as yet unborn association. We expect to have incorporation papers drawn up during January and begin actual operations the same month. Inquiries about the association should be sent to me.

"As yet there is not much that I can furnish in the way of news for the ARMORED CAVALRY JOURNAL, but I hope to be able to send contributions regularly in the future."

What Would You Do?

*by Colonel Hamilton H. Howze**

SITUATION

You are the commander of a Cavalry Squadron engaged in preceding and covering the advance of an Infantry Division in a fluid situation. It is now 1000 hours on a bright clear day.

You have reconnaissance troops on parallel roads several miles to your right and left. These are committed and not available for other missions. The principal route of advance of the Infantry Division is via Newton to Manatee. The principal part of your squadron is moving on that road, as is your command group.

Enemy resistance has been confined to sporadic delaying action. Enemy tactical air power and ours are about equal.

A reconnaissance troop has been leading the advance on the Newton-Manatee Road. As its troop commander made the turn at M, he, with a wisdom uncommon to most, dispatched a platoon to cover the flank of the troop and squadron. The flank platoon leader established the bulk of his platoon in position on the Hill at C, but sent one scout squad and one rifle squad into the woods at D and E to defend the bridge over Wildcat Creek, a stream unfordable to tanks or other vehicles. All country on the sketch, except for Tiger Mountain, is good going for vehicles.

As you in your quarter ton pass the woods at M, you hear small-arms and heavy-caliber firing break out to your left front. Accordingly, you stop at the houses at L and get in communication with the various elements of your command.

The troop commander of the reconnaissance troop reports that his troop, as it went into the woods at K, received heavy flat-trajectory fire from the hills north of Wildcat Creek. He also says that his platoon leader on the left flank reports that things are hot and difficult where he is: several hundred enemy infantrymen suddenly jumped across the ridge at A and proceeded South, crossed the creek, and began working in to the woods at B. Our fire killed a number of this infantry but it kept coming The detachment in the vicinity of D and E can be heard firing heavily, but radio contact with it is lost. One enemy tank can be seen burning at F; two other enemy tanks have disappeared into the woods at G.

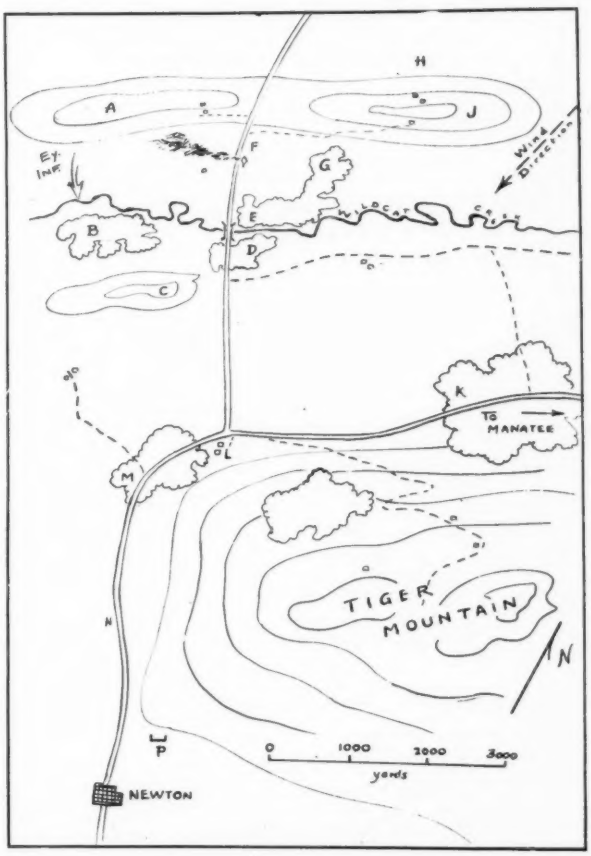
Your cub plane reports that he can spot about 30 or 40 vehicles in the vicinity of H, some of which are obviously tanks. A few tanks are firing South from J.

The head of your rifle troops is now approaching the woods at M.

The head of your tank troop is at N.

The howitzer troop has one platoon already in firing position at P. The other two howitzer platoons are with reconnaissance troops on other roads.

At this time the Division G-3 happens to join you in his quarter ton. Conference results in this instruction from him to you: "Hold what you've got. For God's sake, let's not lose Tiger Mountain—it would take us a week to re-take it. We can have a single battalion of Infantry up to you in about two hours. Have guides



*Director of Instruction, The Ground General School.

meet it at Newton and put it in position, attached to you. A company of medium tanks will reach you about the same time. Handle them the same. The main strength of the division cannot get here until daylight tomorrow. Hold the position until that time. You may be facing the beginning of an attack by the 90th Light Division, which, as G-2 has recently and reluctantly confided, is in the area, in good condition, with the probable intention of making a determined stand which may involve attack. I will square all these instructions with the Division Commander."

About this time you note with dismay that artillery fire of a caliber about 150mm is being methodically adjusted in on the Road Junction just North of you.

Requirement

What is your plan:

a. For the disposition and actions of those elements of your squadron presently on the scene?

b. For the utilization of reinforcing troops which will arrive in two hours' time?

Notes

The organization used here is the Proposed Cavalry Squadron: Three reconnaissance troops, one tank, one rifle, and one howitzer troop.

SOLUTION

Brief Estimate

My mission is to hold Tiger Mountain. We are faced with a possible attack in division strength, supported by tanks. We must occupy and hold Tiger Mountain with our supporting infantry, which will not be available for two hours. To secure this feature, it is essential to delay on Wildcat Creek with our available troops. It is important first to destroy the bridge at D, although there is no guarantee that the enemy will not cross the creek with armored elements above or below this point. The only troops immediately available to me are one reconnaissance troop, one rifle troop, one tank troop and howitzer platoon.

Plan

a. Place harassing howitzer fire on woods at B, and creek line North thereof, at once.

b. Attack at once with one platoon of tanks and one platoon of riflemen to clear up situation at bridge. Destroy bridge, and defend bridge site.

c. Retain one reconnaissance platoon on flank protection near point K. Block road from Manatee.

d. Send one tank platoon and one rifle platoon to reinforce hill C.

e. Hold one tank platoon and one rifle pla ɔon in reserve near point M.

f. Withdraw one reconnaissance platoon from K and place on left flank protection West of M.

g. Hold howitzer platoon in present position to cover entire area.

h. Expected development will be to destroy bridge at D, hold observation there, and counterattack enemy at B should he launch an assault. Should enemy not launch assault from B, attack the woods with tanks and riflemen to clear out his bridgehead.

i. When reinforcements arrive, their initial mission will be to organize a defense of Tiger Mountain, then to prepare counterattack plans.

Discussion

It is essential to destroy bridge at once. Although there is no guarantee that enemy can not cross at other points, this is necessary to secure initial delay.

Infantry in woods B represent a bridgehead in rear of which a crossing for tanks may be constructed. It might be considered desirable to attack it at once with all available troops except those used at bridge D. The situation at this time is not sufficiently clear to indicate that a crossing has not been made West of B. Should this be occurring, the command would be exposed to a flank attack from the West, making it impossible to withdraw on Tiger Mountain. It is therefore desirable first to develop the situation on the West, using the reconnaissance platoon. Should the enemy assault Hill C from Woods B, it would present an excellent opportunity to destroy him by an attack from the West by the reserve.

It is also essential that flank protection be held on the Manatee Road.

1. Failure to hold right flank protection. 15
2. Failure to launch attack on bridge to clear up situation and destroy 20
3. Failure to reinforce Hill C. No cut, provided attack on B is launched. 15
4. Failure to provide left flank protection 15
5. Failure to hold squadron reserve. No cut, provided left flank protection is established, and reserves are used in attack on B. 15
6. Failure to place reinforcing troops on Tiger Mountain initially. 20
7. Any attack across Wildcat Creek prior to arrival of reinforcements. 25

OTHER BRANCHES

Major General J. L. Homer

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By 1st Lieutenant C. H. Ruse

"The war, so recently ended, has clearly illustrated the advantages of and the need for cooperative action and thorough, mutual understanding throughout all elements and echelons of the Army.

"This need was manifest to the Antiaircraft Artillery early in the war, when in addition to its primary mission of destroying enemy aircraft, it was called upon to serve as Infantry, as Field Artillery, and in the anti-mechanized role. Searchlights were also used to illuminate night battlefields for the Infantry.

"No one can tell at this time the part our new weapon, the Guided Missile, will play in the future development of the Army. But we do know it will be an important part, and that it will in some way affect every branch of the Service. It is therefore essential that everyone in the Army keep abreast of developments in this new weapon and it is equally important that those of us charged with the employment of the guided missile be informed of the activities and developments within other branches. Our peacetime training must be based on a constant exchange of ideas.

"In fostering this exchange of ideas the Armored Cavalry Journal is taking a broad step toward achieving cooperative action and mutual understanding. The portrayal of the activities of 'Other Branches' to its readers is a definite service to the Army and to the nation.

"We of the Antiaircraft Artillery and Guided Missile Center at Fort Bliss, sincerely appreciate this opportunity to present the story of our activities, and I personally would like to congratulate the Journal on its farsighted policy in maintaining the 'Other Branches' section."

J. L. Homer

Major General, U. S. Army,
Commanding General, Antiaircraft Artillery and Guided Missile Center.

COAST ARTILLERY CORPS

The Antiaircraft Artillery

*by Lieutenant Colonel Alvin T. Bowers**

The demonstrated superiority of the SCR-584-M9 director-automatic laying 90mm gun combination against flying bombs was responsible for the decision to deploy U.S. antiaircraft battalions in diver defense of Antwerp during the toughest part of the European war. On occasions antiaircraft guns were used to stop German armor. In this article, Colonel Bowers discusses thoroughly the uses and importance of Antiaircraft Artillery in a modern army.

PRIOR to World War II many of the extremist proponents of heavy air power denied the feasibility of effectively defending against air attacks with Antiaircraft Artillery. Here are some of our own Air Corps statistics on the effectiveness of German flak. In the raid on the shipbuilding yards at Kiel, in June of 1943, 20% of all planes were damaged by antiaircraft artillery flak. The following month in an attack on the industrial plant at Kassel, 65.5% of our planes were damaged by antiaircraft artillery.

In a general study of the over-all figures, there was an indication that on our raids damage by enemy antiaircraft artillery accounted for 20 to 60 per cent of all damage, both major and minor, to our attacking force.

We believe that our Antiaircraft Artillery is superior to any in the world in construction and fire control equipment. Our 12th Army Group reported that from "D" Day to 20 December 1944, in 4,393 raids, by 9,700 enemy planes, 1,192 were destroyed and 781 probables. This is good shooting. The record of the 12th Army Group is matched by those of our other armies, including those in the Pacific.

The importance of Antiaircraft Artillery during World War II can be readily appreciated when study of any amphibious operation is undertaken. In almost all of these types of invasions, the Antiaircraft Artillery went in with an early wave.

*Coast Artillery Corps, Ft. Bliss, Texas.

At Anzio, the position of our troops was extremely precarious. The line of supply came from ships in the harbor. The Germans threw every available plane at this shipping. In one instance a formation of 60 JU 88's, DO2 17's, and HE 177's were picked up approaching the harbor. The 90's were able to open up while these planes were far at sea. This broke up their formation and the attacks by single planes—dive, low level, medium, and high level bombing, together with deck strafing had very limited success.

The Antiaircraft Artillery defenses are credited with saving our line of supply. In a short period of time the enemy lost over 102 planes, and they were forced to abandon large-scale air attacks on the Anzio harbor. Records show that forty per cent of all attacking planes were shot down.

A similar situation occurred when the Remagen Bridge was crossed. The Germans realized the importance of this bridge and immediately launched all available planes with a mission to destroy it. In the early morning of the crossing, three Stukas and one ME 109 dove at the bridge; all four were destroyed. Later that morning, eight Stukas dove at the bridge, and all eight were destroyed with the aid of searchlights. The antiaircraft artillery made a very definite contribution toward keeping this bridge open until auxiliary bridges could be built.

Secondary missions of antiaircraft artillery frequently rival in importance its primary mission. Northwest of the City of Cebu, in 14 days of firing, a detachment of 90 millimeter guns knocked out seven tunnels, 17 dugouts, 77 pillboxes, seven trench systems, four supply dumps, three DP's, destroyed one CP, and silenced 29 machine guns. General Omar Bradley stated that without the help of the Antiaircraft Artillery Omaha Beach could not have been held. There the units functioned in a ground role.

During the early phase of the Bulge attack practically no field artillery was available to stop the German armor. However, nine battalions of antiaircraft artillery were available, and their employment as artillery and antitank weapons caused the slow-down of the attack which was vital in the saving of Liege and Antwerp.

Let us participate in a typical antiaircraft artillery action.

The city air-raid sirens, with their mournful, ear-shattering howls, are signalling the approach of enemy bombers. Minutes later, when the last throbbing roar of the sirens dies, a deep silence falls on the port and city. People are scurrying into shelters. The lights in the ports go out by areas, leaving large patches of blackness.

After a short period of waiting and growing tension a thin curving stream of brilliant red dots rises into the night sky. Another stream of red rises beside it. Then another and another—nearer now. Seconds later a distant chattering of rapidly firing guns is borne in. Now the volume of sound grows as other antiaircraft guns spring into action. Soon the whole port area is jarred by fire of all types of antiaircraft, from the rapid staccato of machine guns and the beating cough of the 40s (40mm automatic cannon firing 120 rounds per minute) to the heavy thunder of the 90's (90mm guns firing 25 rounds per minute). A fantastic number of rounds from hundreds of hot gun barrels are hurtling toward enemy raiders. In the tracer-filled sky two flaming planes fall to earth. A terrific concussion signals the collision of a fully loaded bomber into a mountainside.

Now the surviving enemy planes are speeding out of range. The gunfire dies down, then stops. Silence settles once more, only to be broken again by the steady, unwavering howl of the city sirens signalling "all clear."

That was the antiaircraft artillery in action. That spectacular display of light, fire and sound was the punch of our antiaircraft artillery.

Now let's turn back the clock about a half hour, reset the battle stage, move our observation point to one of the 90mm antiaircraft gun batteries and observe how it joined in the fight.

This battery, we find, is located on a bluff overlooking the port. It is a good gun position affording excellent "visibility" for the radar and a clear field of fire for the guns of 360 degrees. The radar is concealed in a hole blasted out of the ground. Only its dish-shaped antenna is above ground level. About 15 yards away an optical tracker is located in its own small pit. These two instruments furnish to the electronic computer the "present position" of the enemy in the sky under all conditions of visibility, day or night. A revetted trailer near by carries the computer. This instrument accepts the "present position" data from the tracking instruments and applies automatically all ballistic corrections. It adds superelevation, drift, prediction. This combined data is automatically transmitted to the guns.

The guns, which are located about 250 yards from the radar, accept the data from the computer and automatically point themselves continuously at the predicted position of the target. There are four of these guns set in individual revetments, in a rough square measuring about 50 yards on a side. Each gun is dug in to a depth where its crew will be protected from flying shell fragments. Where it is impossible to dig a gun in, a revetment is built up to the height of the gun trunnions.

The sound of the 35 KVA power plant, generating only enough power now to keep the radar warmed, can be heard. Four turrets of multiple-mounted machine guns are dispersed around the area for local protection. In the near-by Battery CP the duty officer and his enlisted assistants form the stand-by crew. One of these assistants is just making his "half hour check" of the gun stand-by crews over the hot loop.

The duty officer is now answering the buzzing of the telephone marked AAOR (Antiaircraft Operations Room). He receives the long-ring warning of "Condi-

Antiaircraft guns blast enemy raiders over a North African port.

tion Yellow." One NCO alerts the stand-by crews over the hot loop and announces "Condition Yellow." Another NCO plots the location of "multiple hostile" targets on his plotting board. The duty officer notes that the targets, now about 100 miles away, appear to be headed for the ports, and rings the BC to inform him of the situation. In a very short time the BC enters and checks the plots. The radar crew reports that the radar is searching.

When the plots indicate to the AAOR that the local port is definitely the objective the warning "Condition Red" is received. The BC presses a button which sounds the local siren. In less than three minutes after the sounding of the siren the guns are completely manned and ready for action.

When the plots on the long-range chart have reached the proper area, they are transferred to the short-range chart. A report is received over the "command line" that the radar is "on target." The computer operator adjusts his dials and notes that the fuze dial is "off scale"—the target is beyond range. Slowly the fuze dial creeps down to 30 seconds (time of flight of the projectile) and then lower. At 26 seconds the BC gives "Commence Firing." Soon the Chief Radar Operator reports "target destroyed." A new target is assigned, and the guns swing over to it and renew their firing. So to the end of the raid, when "Condition White" is announced, signalling the "all clear." The BC then makes out his report.

The "close-up" above was a view of one type of antiaircraft artillery unit in only one type of action. There are other types of units in the antiaircraft, each capable of performing multiple types of missions.

The antiaircraft gun battery, in addition to its primary function of defense against aircraft, is prepared when the situation demands—and has done so in the past war—to blast pillboxes with direct fire, to fight tanks, to fire long-range harassing fire, to interdict enemy supply roads, to destroy personnel and unarmored vehicles with time fire, to attack vital pin-point targets at long range, to place guide lines of aerial bursts for directing our aircraft to their targets, to engage in counterbattery fire, to destroy enemy OP's, to give close support to the infantry and to destroy buzz bombs.

The antiaircraft gun battery can perform these missions swiftly and with tremendous fire power. At Toulon, when French Army "B" Headquarters wanted to take advantage of a target of opportunity, a column of trucks carrying enemy reinforcements, they called on the antiaircraft. Two batteries put more than 200 round of 90mm HE shells in the air before the first round landed. The target was smothered, all rounds falling within 65 seconds.

Rivaling the heavy gun in versatility and deadliness are the 40mm and 37mm automatic antiaircraft cannon. During the war they could be found anywhere and usually were. These guns, capable of firing 120 high explosive projectiles per minute, each weighing two pounds and fitted with supersensitive fuzes, were the best known of all Antiaircraft weapons to troops of other branches. They gave added security to our front-line soldiers during the early days of the war in Africa when Stuka Valley and Messerschmitt Lane were well travelled aerial highways; "H" hour, "D" day, of every amphibious operation in this war found these guns in large numbers in the early waves of boats streaming for the beach. Mounted on half tracks the M15, with one 37mm antiaircraft gun and 2 coaxial .50 cal. machine guns were familiar and reassuring sights to countless infantry and armored force soldiers. Each of these M-15's was accompanied by an M-16. The M16 was also a half-track vehicle on which was mounted a turret carrying four .50 cal. machine guns. This electrically operated turret could be traversed and elevated rapidly while pouring out streams of bullets. These broke up many an enemy aerial assault on our armored and infantry spearheads.

In later stages of the war, more numerous by far than any other type of antiaircraft automatic cannon was the 40mm gun, with its accompanying 4-barreled .50 caliber machine gun, turret mounted. This pair could be seen everywhere; on airfields in the rear areas, along every important supply route and deployed in the fighting zones. Divisions had complete battalions of them attached. Every Field Artillery battery had them as neighbors. They could always be found in the most forward positions of the front lines. Here, with their tremendous fire power, they were death to low-flying planes and of superlative worth in their alternative missions of laying down supporting fire for our infantry attacks and for resisting enemy counterattacks. They could be found in position to protect the cover river crossings. In Italy they were on the banks of the Rapido River in the bloodiest battles of the Italian campaign. There on one occasion they covered the approach of the assault troops for a crossing and protected their retreat when the assault failed. They were on the beaches in the landings on Pacific Islands. The "40" and its companion, the "quadruple .50," were used for simulating attacks by infantry at night, for marking, with tracer fire, boundaries between units in night attacks and for reducing enemy machine-gun nests. When the final scores are totaled for World War II the automatic antiaircraft cannon will receive a higher score of enemy aircraft destroyed than will any of the other antiaircraft weapons.

The searchlights, when supplanted by the radar for night firing, were shifted to artificial moonlight assignments, and proved so useful in forward areas that they will be retained for that use.

In the closing days of World War II the Antiaircraft Artillery had the most modern artillery weapons in our Army. It included firing data devices that continuously

transmitted data to the guns automatically, mechanisms that made a battery fully automatic except for gun loading. Guns that traversed and elevated with speeds to match the fastest flying targets, turrets with quadruple mounts which reacted to the slightest touch of a finger.

The greatest improvements made were directly attributable to the radar as conceived and developed by the Signal Corps and the Antiaircraft Artillery. This opened up an entirely new field of investigations as to application of principles, and resulted in such side developments as the proximity fuze and controlled bombs.

In automatic weapons the development trend has been toward increased fire power and speed of action. To this end the .50 cal. single mount has been transformed into the quadruple turret mount, and the Bofors 40 is now dual mounted on a full track vehicle. The guns too have stressed rapidity of laying, but with them accuracy of fire has been considered more important than volume. The 90mm gun has proven more effective in a dual role than the much touted German 88, and shows superiority in both air and ground firing. The lower silhouette of the 88 is about its only advantage.

Newest and most vital addition to the matériel of the antiaircraft artilleryman is the radar. Its electric scrutiny of the sky is unhindered by darkness, by rain, fog or snow. It can pick a target out of the sky and follow it automatically and smoothly. It determines the distance to the target by measuring the almost infinitesimal time interval that occurs between the moment an electric impulse is projected toward the target by the radar and the moment of its return. This range, and the direction to the target, it transmits automatically to the director, which is the computing instrument of the battery, for conversion of this information into firing data.

The first radar, the SCR-268, reached the antiaircraft soldier about 1940. Intended to replace the old sound locator it was primarily searchlight equipment. However, its possibilities for use as a gun pointing instrument were immediately recognized and necessary modifications were accomplished. It went to war with the first antiaircraft units to see action, and despite its crudeness contributed to many a successful defense against enemy air raiders, particularly around Algiers, North Africa and Palermo, Sicily. In early 1944, the antiaircraft received its new radars specifically designed for gun laying. This set, the SCR-584, was the answer to the antiaircraft artillery soldier's dreams. With it the antiaircraft artilleryman could at last shoot as well at night as he could in daylight. He improved his daylight shooting too, since he could now "see" farther (up to 70,000 yards), and therefore pick up his target in plenty of time to make his data smooth.

Born of the antiaircraft artilleryman's desperate need for seeing the target under all conditions of visibility and weather, the SCR-584 became one of the most widely used radars. The Field Artillery used it for enemy road surveillance and for location of enemy mortar positions; the Air Force used it to direct planes to their targets on close support missions. When equipped with a standard air force bombsight this radar was actually used to release, at the proper instant, a bomb carried by a dive bomber 20 miles away and diving on its target through a blanket of fog. The SCR-584 played its greatest roles in England during the battle against the V-1 and in Belgium in the anti-Buzz-bomb defense of Antwerp.

The antiaircraft artillery weapons with which we ended the war will most certainly be used at the start of any future wars. The importance of antiaircraft artillery has been recognized by making them an organic part of the infantry division. However, our present equipment has limitations which future developments in offensive weapons may render obsolete; for example, the German V-1 weapon flew at a speed of between 300 and 400 miles an hour. Developments today indicate that this same weapon equipped with a ram-jet engine may have a speed upwards from 1,500 miles an hour and a range of up to a thousand miles. Our present antiaircraft equipment could not cope with these missiles nor with medium or high flying bombers traveling at supersonic speeds. At the present moment this supersonic barrier is being attacked by both England and America, and success appears imminent. No counterweapon has yet been developed for the V-2 rocket, which has a speed of 3,500 miles an hour and a range of 200 miles. The Antiaircraft Artillery is deep in the problem of guided missiles for this purpose as well as for use on the offense.

Present weapons must not be discarded. They are still vital and will play their role in the future. The Army Air Forces do not believe that *tactical* aircraft, engaged in ground strafing and low-level bombing attacks, will exceed the speed of the present-day fighter bomber. Even if aircraft assigned to tactical missions are capable of flying at supersonic speeds they will have to be slowed down to approximately 400 miles per hour when they make their attack. It is impractical to strafe or bomb accurately at low levels and high speeds. Therefore, our present automatic weapons are capable of functioning efficiently against such types of attack.

The Antiaircraft Artillery has a brilliant future in the light of present research and development. With the cognizance that the research laboratories must work hand in hand with the professional in the field, the next 10 years will show amazing advances in this branch of the Service.

No Antiaircraft Artilleryman will ever be satisfied until he has a missile with a muzzle velocity equal to the speed of light, with an accuracy of 100 per cent hits, with the ability to engage targets that travel at speeds in excess of 5,000 miles an hour, and with a lethal range from a few hundred feet to the outer limits of the stratosphere.

tion Yellow." One NCO alerts the stand-by crews over the hot loop and announces "Condition Yellow." Another NCO plots the location of "multiple hostile" targets on his plotting board. The duty officer notes that the targets, now about 100 miles away, appear to be headed for the ports, and rings the BC to inform him of the situation. In a very short time the BC enters and checks the plots. The radar crew reports that the radar is searching.

When the plots indicate to the AAOR that the local port is definitely the objective the warning "Condition Red" is received. The BC presses a button which sounds the local siren. In less than three minutes after the sounding of the siren the guns are completely manned and ready for action.

When the plots on the long-range chart have reached the proper area, they are transferred to the short-range chart. A report is received over the "command line" that the radar is "on target." The computer operator adjusts his dials and notes that the fuze dial is "off scale"—the target is beyond range. Slowly the fuze dial creeps down to 30 seconds (time of flight of the projectile) and then lower. At 26 seconds the BC gives "Commence Firing." Soon the Chief Radar Operator reports "target destroyed." A new target is assigned, and the guns swing over to it and renew their firing. So to the end of the raid, when "Condition White" is announced, signalling the "all clear." The BC then makes out his report.

The "close-up" above was a view of one type of antiaircraft artillery unit in only one type of action. There are other types of units in the antiaircraft, each capable of performing multiple types of missions.

The antiaircraft gun battery, in addition to its primary function of defense against aircraft, is prepared when the situation demands—and has done so in the past war—to blast pillboxes with direct fire, to fight tanks, to fire long-range harassing fire, to interdict enemy supply roads, to destroy personnel and unarmored vehicles with time fire, to attack vital pin-point targets at long range, to place guide lines of aerial bursts for directing our aircraft to their targets, to engage in counterbattery fire, to destroy enemy OP's, to give close support to the infantry and to destroy buzz bombs.

The antiaircraft gun battery can perform these missions swiftly and with tremendous fire power. At Toulon, when French Army "B" Headquarters wanted to take advantage of a target of opportunity, a column of trucks carrying enemy reinforcements, they called on the antiaircraft. Two batteries put more than 200 round of 90mm HE shells in the air before the first round landed. The target was smothered, all rounds falling within 65 seconds.

Rivaling the heavy gun in versatility and deadliness are the 40mm and 37mm automatic antiaircraft cannon. During the war they could be found anywhere and usually were. These guns, capable of firing 120 high explosive projectiles per minute, each weighing two pounds and fitted with supersensitive fuzes, were the best known of all Antiaircraft weapons to troops of other branches. They gave added security to our front-line soldiers during the early days of the war in Africa when Stuka Valley and Messerschmitt Lane were well travelled aerial highways; "H" hour, "D" day, of every amphibious operation in this war found these guns in large numbers in the early waves of boats streaming for the beach. Mounted on half tracks the M15, with one 37mm antiaircraft gun and 2 coaxial .50 cal. machine guns were familiar and reassuring sights to countless infantry and armored force soldiers. Each of these M-15's was accompanied by an M-16. The M16 was also a half-track vehicle on which was mounted a turret carrying four .50 cal. machine guns. This electrically operated turret could be traversed and elevated rapidly while pouring out streams of bullets. These broke up many an enemy aerial assault on our armored and infantry spearheads.

In later stages of the war, more numerous by far than any other type of antiaircraft automatic cannon was the 40mm gun, with its accompanying 4-barreled .50 caliber machine gun, turret mounted. This pair could be seen everywhere; on airfields in the rear areas, along every important supply route and deployed in the fighting zones. Divisions had complete battalions of them attached. Every Field Artillery battery had them as neighbors. They could always be found in the most forward positions of the front lines. Here, with their tremendous fire power, they were death to low-flying planes and of superlative worth in their alternative missions of laying down supporting fire for our infantry attacks and for resisting enemy counterattacks. They could be found in position to protect the cover river crossings. In Italy they were on the banks of the Rapido River in the bloodiest battles of the Italian campaign. There on one occasion they covered the approach of the assault troops for a crossing and protected their retreat when the assault failed. They were on the beaches in the landings on Pacific Islands. The "40" and its companion, the "quadruple .50," were used for simulating attacks by infantry at night, for marking, with tracer fire, boundaries between units in night attacks and for reducing enemy machine-gun nests. When the final scores are totaled for World War II the automatic antiaircraft cannon will receive a higher score of enemy aircraft destroyed than will any of the other antiaircraft weapons.

The searchlights, when supplanted by the radar for night firing, were shifted to artificial moonlight assignments, and proved so useful in forward areas that they will be retained for that use.

In the closing days of World War II the Antiaircraft Artillery had the most modern artillery weapons in our Army. It included firing data devices that continuously

transmitted data to the guns automatically, mechanisms that made a battery fully automatic except for gun loading. Guns that traversed and elevated with speeds to match the fastest flying targets, turrets with quadruple mounts which reacted to the slightest touch of a finger.

The greatest improvements made were directly attributable to the radar as conceived and developed by the Signal Corps and the Antiaircraft Artillery. This opened up an entirely new field of investigations as to application of principles, and resulted in such side developments as the proximity fuze and controlled bombs.

In automatic weapons the development trend has been toward increased fire power and speed of action. To this end the .50 cal. single mount has been transformed into the quadruple turret mount, and the Bofors 40 is now dual mounted on a full track vehicle. The guns too have stressed rapidity of laying, but with them accuracy of fire has been considered more important than volume. The 90mm gun has proven more effective in a dual role than the much touted German 88, and shows superiority in both air and ground firing. The lower silhouette of the 88 is about its only advantage.

Newest and most vital addition to the matériel of the antiaircraft artilleryman is the radar. Its electric scrutiny of the sky is unhindered by darkness, by rain, fog or snow. It can pick a target out of the sky and follow it automatically and smoothly. It determines the distance to the target by measuring the almost infinitesimal time interval that occurs between the moment an electric impulse is projected toward the target by the radar and the moment of its return. This range, and the direction to the target, it transmits automatically to the director, which is the computing instrument of the battery, for conversion of this information into firing data.

The first radar, the SCR-268, reached the antiaircraft soldier about 1940. Intended to replace the old sound locator it was primarily searchlight equipment. However, its possibilities for use as a gun pointing instrument were immediately recognized and necessary modifications were accomplished. It went to war with the first antiaircraft units to see action, and despite its crudeness contributed to many a successful defense against enemy air raiders, particularly around Algiers, North Africa and Palermo, Sicily. In early 1944, the antiaircraft received its new radars specifically designed for gun laying. This set, the SCR-584, was the answer to the antiaircraft artillery soldier's dreams. With it the antiaircraft artilleryman could at last shoot as well at night as he could in daylight. He improved his daylight shooting too, since he could now "see" farther (up to 70,000 yards), and therefore pick up his target in plenty of time to make his data smooth.

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SIGNAL CORPS

Communications — Nerve Center of An Army

*by Gerald Egan**

FROM a humble beginning, when the telegraph was considered one of the marvels of science and semaphore flags were the accepted means of communication, the Army Signal Corps has grown to gigantic proportions numbering, at its peak in World War II, approximately 360,000 highly trained officers and enlisted men.

When Japan capitulated in August, 1945, its communications networks, totalling more than 800,000 circuit miles, spread out from the War Department in the Pentagon (Washington, D. C.), down through the chain of command, to every spot where American troops were in action.

The Signal Corps resolves itself into four main functions. They are: to train and furnish specialized signal troops and units to all requiring elements of the Army; to operate the Army's communications network; to develop, procure, store, issue and repair communications equipment and supplies; and to perform photographic work for the Army except the Army Air Forces.

No branch played a more vital part in the winning of the war than did the U. S. Army Signal Corps. Signal Corps men were always among the first to land on beachheads both in Europe and in the Pacific. They furnished and operated the signal communications for the break-through at St. Lo; they were in the forefront during the dash across France into Germany, and they were among the first troops to re-enter Manila, where they re-established communications destroyed by the retreating Japs.

Signal Corps photographers accompanied all our armies, and obtained many of the excellent motion picture shots, and stills exhibited in theaters and periodicals throughout the country. Signal Corps radiotelephoto and broadcast facilities played a major role in keeping the American public informed as fast as possible on the World War II campaigns.

Primary responsibility for the fulfillment of the Signal Corps' mission and for the functioning of many related assignments rests with the Chief Signal Officer, who acts in a dual capacity. As chief of an arm and service, he commands and controls troops, activities and services, and as a staff officer, he is staff adviser to the Secretary of War, the Chief of Staff and to the directors of the War Department General and Special Staffs on all matters relating to signal communications and Signal Corps functions within the Army.

Although the Signal Corps operates signal communications in ground echelons only down to the level of the Division, it performs many functions essential to the communications systems of the smaller units. Supervision of the lower echelon communications systems is one of these functions, and others include the procurement, supply, and maintenance of signal communications equipment, coordination of the communications systems of parallel subordinate units, and, to a limited extent, training of communication personnel for the various Ground Forces army.

Each field army is usually allotted a signal construction battalion, a signal operations battalion, a signal radio intelligence company, a signal repair company, a signal pigeon company, and a signal photographic company. However, to supplement these Signal Corps units, the commander of a field army may also call upon a General Headquarters reserve, from which Signal troops of various categories may be drawn by the army requiring them.

Authorized as a separate branch of the Army by Act of Congress on 3 March 1863, and numbering only a handful of men with the crudest material, the Signal Corps had for its first Chief Signal Officer the then Colonel Albert J. Myer, inventor of the wigwag system of signalling. Honored as the founder of the Signal Corps, Colonel Myer was brevetted a Brigadier General in 1880 shortly before his death.

Before we entered World War II, the Signal Corps operated a domestic radio network extending to Honolulu, San Juan, Panama, Seattle (for Alaska), and Manila. Only about 5,000 messages daily were handled. By the time the atomic bombs were dropped, this comparatively small military communications system

*Office of the Chief Signal Officer.

had been expanded enormously into a gigantic round-the-world belt line of multichannel circuits, with a traffic handling capacity of 100,000,000 words per day.

This belt line, extending from Washington to Asmara in Eritrea, to New Delhi (India), to Brisbane (Australia), to San Francisco, and back to Washington, and operated by the Signal Corps' Army Communications Service, formed the greatest unified military communications system ever developed.

Because of the flexibility of this system, all phases of America's war effort were coordinated—mobilization, production, training, transportation, feeding, equipping, and actual fighting.

In 1859, before the Signal Corps was authorized as a separate branch of the Army, Congress appropriated the modest sum of $2,000 for signalling equipment, comprising mostly signal flags, lanterns and similar simple items. During World War II more than six and a half billion dollars were spent by the Signal Corps for signal communications equipment. For the Fiscal Year 1945 alone, the Signal Corps procured: 440,000 radio sets, 550,000 radio transmitters and radio receivers, 915,000 telephones, 2,840,000 miles of wire (excluding wire in cable), and 5,250,000 strand miles of wire.

In the field of research and development, Signal Corps engineers, working with leading civilian scientists, made many notable advances in the production of precision equipment of a highly technical character. The work of the Signal Corps research laboratories rose from a budgetary allotment of $704,000 in the Fiscal Year 1940, to $65,000,000 during Fiscal Year 1944.

It is not generally known that the Signal Corps was responsible for the development, and much of the research on radar until October 1944, when the Army Air Forces gradually took over that part of it defined as peculiar to its own arm.

Virtually all important radar equipment actually employed in combat up to the end of the war, including the complete radar equipment of the B-29s, was developed by the Signal Corps.

It was with the use of specially designed radar equipment that Signal Corps scientists at the Evans Signal Laboratory, Belmar, New Jersey, made contact with the moon in January 1946. Pulses of very high frequency energy were shot out into space, and about two and one-half seconds later their echoes were detected.

In the field of wire communications, the Signal Corps contributed some important improvements. New types of telephones were developed to minimize weight and extend talking range. A lightweight set was evolved in which no batteries were needed; the current for the talking circuit was produced by the sound of the speaker's voice.

Switchboards, too, were extensively improved. The smaller switchboards used at divisional headquarters were so designed that they could be moved rapidly from one command post to another and set up in a matter of minutes. Field switchboards suitable for battalion use were simplified and lightened so one man could carry them.

Many new types of wire and cable were developed. Assault wire, weighing only one-fourth as much as field wire, was so light that one man could easily carry a mile of it on his back. To facilitate the laying of assault wire, special dispensers were developed to replace the bulky reels previously used. With the aid of these dispensers coiled wire could be paid out without a twist or snag from the packboard of a soldier on foot, from the rear of a jeep, from a light airplane flying at two miles a minute over an impenetrable jungle, or even from a bazooka shell or rifle grenade in flight.

Carrier equipment, superimposing several electrical circuits on one physical circuit by means of different frequency bands, was adapted by the Army from commercial civilian designs. Ingenious "packaged" carrier equipments, which could be transported easily, and set up at new locations with a minimum of delay, were also developed.

Some of the most useful communications developments made by the Signal Corps during World War II were in radio. While other more spectacular radio sets were developed, the "walkie-talkie" which enabled a

The Handie-Talkie, one of the most useful Signal Corps radio sets, which was developed for advance ground force units.

Signal Corps Photo

soldier to carry his own broadcasting station with him into combat and operate it, captured the popular fancy. Later came the "handie-talkie," a transceiver which the soldier could easily carry in one hand.

In addition there were field portable radio sets, which could be carried by one or more men and immediately set up and utilized for two-way communication. The Signal Corps also developed a large variety of vehicular sets, which afford greater range than pack or portable radios. Push-button radios were provided in tanks, tank destroyers, and other vehicles, as well as in all army airplanes.

Outstanding among the larger vehicular sets is the powerful mobile radio station—SCR-299, and later the SCR-399 and SCR-499. These were installed in a standard 2½-ton truck and equipped to maintain the two-way communication of an army or corps headquarters across distances of hundreds of miles. It could operate either on the move or while parked.

Radio Relay equipment was another scientific development fostered by the Signal Corps. Extended use of very high frequency (VHF) radio, made necessary to accommodate the great volume of military communications traffic, encountered a serious obstacle in that such frequencies are not generally effective beyond the visual horizon.

The need for communications over greater distances in maintaining control with a fast-moving army, or to span breaks in wire transmission lines, was met by the development of the radio relay system. By this means, signals, both voice and teletype, were relayed automatically from point to point, providing a continuous link from the sending to the receiving positions.

Originally intended as a supplement to multichannel wire networks, the radio relay systems proved so dependable that, in many cases, wire was not installed even in stabilized situations.

Among the major landline projects engineered and constructed by the Signal Corps during World War II, the most outstanding was the great telegraph and telephone line extending from Calcutta (India) to Kunming (China) and beyond, a distance of over 2,000 miles. This has been called a communications achievement without parallel. The line stretches through impenetrable jungles, over the Himalaya Mountains, and spans some of Asia's mightiest rivers. It was completed despite monsoons, a desperately resisting enemy, the dangers of the jungles and almost insurmountable construction obstacles.

Another such project was the Alaska Military Highway Telephone-Telegraph Line, constructed in one year. Signal Corps troops fought raging blizzards, subzero weather, mud, and 2,060 miles of rugged wilderness to provide a vitally needed link between the United States and Alaska.

Between June 1942 and August 1945 the Signal Corps photographed 1,251,212,709 V-Mail letters. In 1944 alone, there were 634,334,199 V-Mail letters. It is estimated that the process for that year saved an air freight bulk of 30,000,000 pounds.

During the current fiscal year the Signal Corps is placing particular emphasis on its research and development program. Twenty-five million dollars, approximately one-fourth of the budget, will be expended for this purpose.

Major expenditures in this field will be in the general multipurpose radar field; continued research in wave propagation—in an effort to widen the usable portions of the already crowded radio spectrum—and improvements in the field and fixed plant applications, including short, medium and long-range ground radio communications equipment. The miniaturization program begun during the war will be continued in order to provide small, lightweight tactical field equipment.

A small, active staff of inventive and experienced technical men will be maintained to design and develop the most modern equipment in the laboratories as a basic foundation for rapid expansion in case of emergency.

Other proposed Signal Corps expenditures are based on carefully studied plans for furnishing fast, accurate and secure communications services for the Army in the United States, in occupied countries and at other points where United States troops are based and where these facilities are essential.

Procurement has been reduced to the minimum necessary to augment existing stocks and to provide for a limited amount of newly designed equipment for extensive field tests.

Intensive training of the new men coming into the Signal Corps to replace the highly specialized operating personnel now returned to civilian life is one of the major concerns. These new men present the same training problem encountered during the war. The enlisted school at Fort Monmouth is giving courses in 29 different classes of communications trades, and communications and photographic specialists in order to provide these replacements.

The Signal Corps will continue to produce and distribute all motion and still pictures for the War Department agencies. This will include the production of essential films for training all components of the postwar Army. Many subjects for training films covering scientific and technical advances brought out during the war are included in this program.

Active participation in the postwar Army ROTC program is well under way, with many colleges and universities already approved for Signal units. Signal Corps extension courses have been revised and extended to reflect lessons learned in the various campaigns of World War II. These courses are designed to enable National Guard and Signal Corps Reserve Officers to study the latest techniques of military communications and other Signal Corps functions.

QUARTERMASTER CORPS

American Soldier of Tomorrow

*by W. C. Hendricks**

Meet the United States soldier of the future! He is the most efficient fighting man on the face of the earth. To make the American soldier of the future the finest of them all, and keep him tops through unrelenting effort, is the purpose and determination of the Quartermaster Corps.

IF the Quartermaster Corps has its say the American soldier of tomorrow will continue to be the best equipped and best fed in the world. Today the QMC, as always, is busy developing and testing new food, clothing and equipment.

In both World War I and II the American soldier was fortunate in that he had strong Allies to hold the lines while vital time was being consumed in making ready. World War II posed an especially tough problem for the Quartermaster Corps, but it whipped it. For the first time in history, United States troops were called upon to fight in almost every kind of climate and under virtually every condition to be found in the world.

Before the last war, American military experience had been largely confined to action in the temperate zone and the feeding, clothing, and equipping of troops did not pose any problems radically different from those of previous wars nor of the civilian economy. The challenge of the global war was met by another demonstration that necessity can sometimes be the mother of invention. Starting with World War I conceptions, the sinews of combat were steadily improved in quality and serviceability to meet the demands of every kind of climate and topographic situation and the quantities of production attained an ever-increasing acceleration. No nation and no army ever did a better job.

Now World War II rests with the writers of history.

The world finds itself today in a swiftly moving scientific age in which atomic energy, electronics, and guided missiles are a few of the new items. These weapons will be perfected and others, perhaps even more potent, will follow.

The Quartermaster Corps, which is charged with developing and supplying all of the materials needed to maintain the soldier, intends to meet the challenge of the future by helping to keep the United States in the forefront of military technological advancement; to so develop the power of this Nation that no foreign aggressor will dare strike; and thus to insure the peace.

The scientific resources of scores of universities, colleges, governmental agencies, industrial laboratories, and foundations throughout the United States have been mobilized by the Quartermaster Corps as part of its long-range program looking to the preservation of national security under any emergency that might confront this country. Intensive research is being conducted in such subjects as food products, clothing and textiles, shelter, chemicals, mechanical equipment and and equipage, fuels and petroleum products, and the many other items needed by the soldier. Some of the finest scientists in Europe have joined the quartermaster staffs to add their intellects to the coordinated program.

Reaching deeply into the fields of pure and applied sciences, this program has for its purpose the exploitation of every factor that contributes to making the American soldier the most efficient in the world. Because the civilian population requires the same substance for its maintenance, health, and well-being as does the soldier, discoveries and improvements that are made in the course of this research and development program will benefit all of the people.

Basic in this far-reaching Quartermaster program is the study of man himself.

All the weapons, all the machines, all the equipment must be handled by men. It is not sufficient that our weapons be superior to those of other nations—our men must be superior also. Now, for the first time, concentration is being made upon reducing to an exact science the study of man's requirements, his capabilities and

*Office of the Quartermaster General.

limitations under any given condition of climate, terrain, or objective. The science of climatology undertakes to determine how best to protect man from his environment.

Precedents have had to be ignored and bold strides taken in exploring these new fields. Studies are being made of the soldier both from the physiological and psychological standpoint. Measurements are being made of his reactions to heat and cold, to varying amounts of exertion, to fatigue, and to all the other elements that involve his relationship to his surroundings.

The study of environmental protection is centered in the Quartermaster Climatology Research Laboratories at Lawrence, Mass. Through the development of this science it is expected that all guesswork will be taken from such questions as to how much and what kinds of clothing are needed by a human being at any place on earth at any time of the year.

Weather chambers are operated at the Lawrence laboratories where any kind of weather from 65 degrees below zero to 160 degrees above can be reproduced, as well as any degree of humidity. Even rain and snow are employed. Men spend hours in these chambers wearing clothing and using equipment that would be required under field conditions. Other tests are carried out on high mountains, in the Arctic, and in the tropics where men try out new equipment under actual field conditions and report their findings.

At the Bikini tests, Quartermaster observers noted the effects of atom bomb blast, heat, and gamma rays on food, seeds, growing plants and animals, wearing apparel, packing materials of various types, and many other kinds of equipage. The articles exposed to the bombs are now undergoing examination and analysis in laboratories so that the effects of the atom bomb may be learned. After the effects are determined steps will be taken to find means for combatting the damage done by atomic energy.

What kind of food will be supplied to the soldier of the future?

Centering in the Food and Container Institute of the Armed Forces at Chicago, the Quartermaster Corps is conducting the most widespread and coordinated scientific research program into foods and containers ever undertaken. With the cooperation of nearly 100 research laboratories and with the assistance of a civilian committee on food research, studies relating to almost every phase of food production, processing, and packaging are being pursued. More than 125 projects have already been brought under way relating to the utility, stability, nutritional adequacy, and acceptability of foods.

In their laboratories scientists are seeking to learn the causes of food deterioration and why foods lose flavor and texture in processing or in storage. Human appetite is undergoing a detailed analysis from physical and mental standpoints so that its secrets may be learned and foods made more acceptable.

To learn what the average American likes to eat, a survey of dietary habits is being conducted throughout the country. The results of this survey will not only give information regarding the distinctive food preferences in the many geographical sections of the Nation, but also in the various economic levels of the population, in isolated and marginal communities, and in occupational classifications. The results of this research should mean a better nourished population and an improved average of physical fitness.

The Quartermaster Corps continues to seek for better rations. Since the war two new operational rations have been developed—the E ration for individual use in combat and the five-in-one for feeding small groups of men separated from their kitchens. Tests have already proved that these rations are greatly superior to the C, K, and 10-in-one rations issued during the war.

As with food, so also the Quartermaster Corps is conducting basic research into all of the other fields appertaining to the essential needs of the soldier. Scientific studies are being made in textiles, clothing, footwear, chemical products, insect repellents and insecticides, rodent repellents, mechanical equipment, plastics, tents, sleeping bags, and many other items.

In the Boston Quartermaster Laboratories research and experimentation is going forward in the processing of leather and the designing of footwear, gloves, and other articles made of leather. Collaborating and assisting in this work are several industrial laboratories. Scientists are endeavoring to develop better and more economical methods for tanning leather and to improve its wearing and water-repellent qualities. They are working toward better designs for Army boots, shoes, and other leather items.

A vast research program is being conducted under Quartermaster direction in the improvement of petroleum products. Various methods are being devised for the production of synthetic petroleum products by shale extraction and manufacture from coal and other hydrocarbons to supplement the natural supplies. Development is being sought of improved types of fuels for rockets, jet-propelled planes and missiles, and diesel engines. In this program the Quartermaster Corps has the assistance of several eminent European scientists.

To improve the wearing qualities, serviceability, and functional characteristics of textiles which go to make up Army clothing, tentage, and numerous other articles, the Quartermaster Corps has organized and set in motion one of the most comprehensive programs of research ever inaugurated in this field.

With its center in the Philadelphia Quartermaster Depot Laboratories and joined by scientists in educational and industrial institutions, studies are being made in the basic and chemical properties of fibers as well as in the characteristics of fabrics and completed garments.

Included in this research are studies of mildew and microbiological deterioration, how to improve wearing qualities, how to prevent woolens from shrinking, how to make fabrics impervious to water and fire. Experiments are being made with cements used as a substitute for thread in closing the seams of garments and tents. Scientists are seeking new types and designs of garments which are lighter in weight, more durable, and so constructed as to give maximum protection against heat, cold, moisture, and insects.

The Quartermaster Corps is constantly improving its mechanical equipment.

At the Quartermaster Depot at Jeffersonville, Ind., and in industries under contract, mobile equipment such as laundries, bakeries, refrigerators, warehouse fork-lifts, shower baths, and repair shops are being made ever lighter in weight, more rugged, and capable of better field performance. The objective is to have all this equipment so light that it may be airborne to points directly behind the fields of combat. Another program calls for standardization of such items as fork-lifts, warehouse tractors and trailers. During the war it was necessary to procure, for example, about 30 different types of fork-lifts from many different manufacturers. Now it is planned to standardize on not more than three sizes with all parts interchangeable.

The myriad of smaller items supplied to the soldier by the Quartermaster such as razors, toothbrushes, lockers, mess kits, cooking and eating utensils are each undergoing fundamental studies to determine how they may be improved or perhaps displaced by something entirely new. There is now under test a new knife, fork, and spoon, each stamped from a single piece of stainless steel, which can be nested, snapped together, and carried in a uniform pocket.

With attention directed to "top of the world" defense, many new Quartermaster items are being tested in Arctic maneuvers this winter. These include mobile kitchens, Arctic clothing, skis, sleds, snowshoes, boots, insulated tents, an immersion-type heater for converting snow and ice into water, and new types of hot food and water containers to mention only a few.

The Quartermaster Corps is the biggest merchant in the world.

During World War II, the Quartermaster Corps supplied food, clothing, shelter, mechanical and personal equipment to more than 8,500,000 men stationed in all parts of the world. It procured some 70,000 different kinds of items and expended more than 21 billion dollars for these supplies.

The problem of supply is one of the chief responsibilities and concerns of the Corps. It has many complexities and is forever changing since a situation in an emergency is never the same. In war the task of organizing and channeling production from the farms, the mines, and the factories is an undertaking of the first magnitude.

Equally comprehensive was the problem of storage and distribution.

As early as 1940, preliminary studies were instituted which culminated in the construction of 22 depots. Thirty-seven market centers, located at strategic points, were organized for the purchase of perishable foods. Since the war these centers have been reduced to 12 in number, but with the high-grade efficiency employed in their conduct and management they have a capacity for expansion to six times their present load.

Besides functioning as warehouses, the Quartermaster Depots are concerned with many other activities such as packing, crating, reclamation, and maintenance of technical laboratories. Electrical accounting machines in each depot are connected in a network which keeps the Office of The Quartermaster General constantly advised of all stock balances, procurement transactions and other information concerning the enormous amount of business being carried on.

An important phase of Quartermaster activities is the reclamation and repair of worn and damaged clothing and equipment. During the 11 months following VJ-Day, materials valued at nearly $150,000,000 have been salvaged, repaired, and returned to stock for reissue. This was accomplished at a wage cost of about $13,000,000, or 9 per cent of the reclaimed value of the supplies.

The Quartermaster Corps is providing orthopedic footwear for servicemen who have suffered disfiguring injuries to their feet and is cooperating with the Veterans Administration in providing the same service for veterans. Special lasts are made for each of these cases and the footwear is constructed at the Boston depot. The service will continue during the lifetime of these veterans or as long as they are in need of special shoes.

Long-range plans for the improved training of personnel and for keeping pace with technological developments have already been put in operation by the Quartermaster Corps. Officers from Ground and Air Forces, as well as from the Navy and Marine Corps are being trained at the subsistence school in Chicago in the latest techniques for processing, distribution, preparation and serving of foods.

Army food service instructors are trained at Camp Lee, Va., and at the same camp advanced courses are conducted for commissioned officers in Quartermaster services and techniques. At all QMC installations, in-service training is an important aspect in the improvement of efficiency.

Nearly a score of colleges are participating in the QMC Officers Reserve Corps training program and many officers are receiving technical instruction in advanced courses at universities, colleges, and trade schools.

CHEMICAL CORPS

Smoke — Tactical Weapon Of World War II

*by 1st Lieutenant C. H. Ruse**

EMPLOYMENT of smoke in battle tactics is not new, yet during the recent war the Chemical Corps introduced several new methods of producing and employing smoke as a weapon of war. It is notable that with newly developed smoke devices it was possible to conceal battle maneuvers of an entire Infantry division under a mantle of chemically produced fog. Whole cities or other large concentrations were made to disappear from view of enemy aircraft under clouds of artificial haze. Smoke was effective in blanketing beachheads against enemy fire. In some instances, prior to assembling for assault, airborne troops were landed behind smoke walls.

Early Use of Smoke in Warfare

Evidence that smoke tactics were known to ancient India is revealed in the Sanskrit epic Ramayana which details the life and adventures of Ramachandra and his final translation to heaven when he hid himself in "that terrible darkness of clouds."

A biblical reference to the advantages of smoke for screening purposes is recorded in the protection of the Israelites by a miracle smoke cloud in their flight from Egypt to the Promised Land in this passage of scripture:

". . . and it came to pass, when Pharaoh had let the people go, that God led them not through the way of the land of the Philistines, although that was near; for God said, Lest peradventure the people repent when they see war, and they return to Egypt. . . ." Exodus XIII: 17. ". . . and the Lord went before them by day in a pillar of a cloud, to lead them the way. . . ." Exodus XIII: 21.

And again when:

". . . the angel of God, which went before the camp of Israel, removed and went behind them and the pillar of the cloud went from before their face, and stood behind them. . . ." Exodus XIV: 19.

Throughout the centuries, men have sought to conceal battle maneuvers. History records that both Caesar and Pompey employed smoke strategy in the wars of the Roman Empire about 50 B.C.

Gustavus, after pursuing Tilly across the Danube into Donauwörth in 1632, effected his crossing of the Leck in the face of the enemy's strongly entrenched camp at Rain, protected by a smoke screen created from burning wet straw.

In August 1704, the advantages of "Fog Operations" were demonstrated when the English and Austrians, led by the Duke of Marlborough and Prince Eugene, under cover of the "Blenheim mist," outwitted the superior French and Bavarian forces of Marshals Tallard and Marsin concentrated on the left bank of the Danube near the city of Blenheim.

Smoke in World War I

The value of smoke as a screening weapon was also recognized during World War I. Smoke shielded operations of the 15th Division, A.E.F., and was employed in the Meuse-Argonne offensive. In 1914 smoke created from the burning of a haystack enabled a British unit to withdraw from the La Basséecanal defense. British smoke shells were developed and put to use by 1916. One year later in the battle of Arras, the great value of accurate projection of these shells came to be appreciated.

German Smoke in World War II

The significance of screening smoke was demonstrated by the Germans in World War II in their blitz of the Low Countries. In May 1940 when the Belgian fort of Eben Emael capitulated to superior German forces, artificial fog successfully curtained flamethrower attacks directed at the embrasures of the ports. German assault troops were protected by a mantle of man-made fog when the steel and concrete fortifications of the French Maginot Line were first broken between Saaralben and St. Avold. The Nazis' crossing of the Marne in 1940 was also made under cover of smoke.

Smoke was used extensively at the ports of Casablanca, Oran, and Algiers by the Germans, and Allied naval units reported their targets difficult to see through the artificial mists during the African invasion. It will be remembered that although British fliers were constantly on the alert in their search for the German battle fleet, they were outwitted by clouds of smoke over Brest that covered the landscape for 40 square miles when the warships *Gneisenau* and *Scharnhorst* made their escape to sea through the channel. On October 10, 1942, the Germans announced that they had evacuated the peninsula across the Kerch Strait

*Office Chief of Chemical Warfare Service.

from the Crimea under cover of artificial fog, intimating that all troops and supplies had been safely withdrawn.

British Smoke in World War II

The initiation of smoke by the British in World War II dates from the days following Dunkirk when the Luftwaffe made daily raids over England. At that time the British used orchard smudge pots to conceal vital installations. Later they developed and devised ways of producing smoke similar to our own. By the time war activities shifted to the Middle East, British smoke had gained considerable recognition and with the raising of a smoke screen over Malta on May 10, 1942, the first smoke dispersion in that area, aerial supremacy over that island passed from German to British control. It is believed that a smoke screen was an important factor in surprising and confusing the formation of 150 German bombers every one of which were either destroyed or damaged by English Spitfire planes and flak.

Innovations in U. S. Smoke

Smoke developments employed by the United States during the war helped materially to hasten victory. Screening smoke was used to blanket ports, harbors and cities in an attempt to prevent accurate bombing and to effect wall-like screens to blind front-line enemy observation.

Employed on all American fighting fronts, smoke was a particularly vital factor in keeping down American casualties in its adaptability to both offensive and defensive combat. It greatly reduced the effectiveness of enemy air operations by obscuring targets. River crossings were shielded by artificial fog and enemy mortar and artillery fire was disrupted by smoke screens which served as protection for our Infantry advances.

Methods of Producing Smoke

The Chemical Corps developed several methods of producing smoke. In addition to screening smokes furnished by its Mortar Battalions, artificial fog, which hid troop movements, ports and bases, was made by mechanical generators, smoke pots, smoke grenades, phosphorus shells and bombs, and aerial spray.

The largest smoke-producing device employed by the Chemical Corps during the war, a mechanical generator (M1) which requires a truck or trailer for transporting, can blanket a square mile of area within 10 minutes. This model generator was developed to fulfill the need for screening large areas quickly. Nonexistent a short time before we made initial landings in North Africa in late 1942, the M1 supplied protection for troop maneuvers when U. S. Forces first landed at Oran. From North Africa, Sicily and Italy to operations in the Pacific this large generator was used to produce large-area smoke screens.

Early experience with the large model indicated the need for a smaller type mechanical generator of similar characteristics. This resulted in the development of a model known as the M2. Weighing only 180 pounds when empty, the M2 mechanical smoke generator could be carried by two men or mounted in jeeps or light landing craft. With favorable wind conditions, this small type fog machine produced smoke screens four to five miles long and 200 yards wide. Both of these smoke producers vaporize hydrocarbon fog oil and water into an oil spray which billows forth in the form of a snow-white steam. The resultant cloud formation is extremely persistent.

While a great number of combat smoke missions were conducted by Chemical Corps mortar companies, Chemical Corps smoke generator companies operated the mechanical generators in both rear-area and combat screening missions. During the height of the fighting in the Mediterranean theater, smoke companies were kept continually on port screening operations. Surrounded by Nazi-held hills, the Anzio Beachhead was the scene of many smoke operations extending over a period of several months. Fog generators maintained smoke screens 15 miles long, fourteen hours every day, to blind the enemy. At night, the machines were turned on at the slightest indication of a bombing raid.

Smoke protection was also supplied by Hexachlorethane (HC) smoke pots ranging in size from the 11-pound container, which burns for six minutes, to the 30-pound size which continues to make smoke about 20 minutes. These smoke pots were used to fill up gaps in support of large screening missions.

For amphibious use, a floating smoke pot was developed and used in river crossings and landing operations

Chemical Corps combat troops of the 161st Smoke Generator Co. operating their M-2 mechanical smoke generators during the screening of the Saar River Valley, Germany.
Signal Corps Photo

and for harbor protection.

A particularly effective ground screen can be built up with white phosphorus (WP) shells fired from the 4.2-inch chemical mortar. During the Sicilian and Italian campaigns, smoke screens from these mortars confused enemy tank crews. The withdrawal of Ranger raiding parties from within the enemy lines was effected under protection of these mortar-made smoke screens. Joining with heavy artillery, the four point two's set up huge WP smoke screens on the North bank of the Volturno when General Mark Clark's Fifth Army crossed that Italian River in October 1943. Chemical Corps floating smoke pots were also set adrift to complete the smoke curtain in this operation.

The quickest way of building up a large smoke screen is by liquid chemicals sprayed from airplane smoke tanks. The Chemical Corps provided the Army Air Forces with FS, a solution of sulphur trioxide in chlorosulfonic acid. This mixture was sprayed from airplane smoke tanks to build up smoke curtains. Two types of tanks were designed for airplane smoke dispersal. One of these is mounted under the wings of light planes and the other is suspended from the bomb bays of larger bombers.

In September 1943 the first American paratroop assault was made under the protection of three smoke screens laid down by light fighter planes near Lae, New Guinea, in the Markham River Valley. The operations started when seven Boston bombers each modernized with chemical spray tanks contributed FS smoke to the three 4,000-foot screens released along the wooded area bordering a Japanese airstrip. The smoke settled rapidly to the ground then billowed as it rose to a height of approximately 400 feet, forming dense white curtains. Under this protection almost 2,000 paratroopers descended from low-flying transports on three sides of their objective and quickly assembled for a successful attack on the airfield.

Smoke bombs, another World War II development, dropped by aircraft proved effective in designating bombing targets, and in covering landing operations. Landing operations at Dieppe and Sicily were made under cover of smoke produced by these bombs. Jettisoned in long neat rows along either side of the harbor, these same bombs, 100-pound WP type, were dropped in Simpson Harbor at Rabaul, New Britain, November 9, 1943. Within a few seconds the white phosphorus rose to form two cloud-like walls, each three-quarters of a mile long, to mark off the target. Shore batteries completely blinded were unable to fire accurately at our waves of bombers which followed immediately and the mission was successfully completed.

In addition to these methods of producing smoke screens, the Chemical Corps developed smoke-filled rockets and colored smoke grenades. The colored smoke grenades were made for either hand or rifle projection and were furnished in colors of red, yellow, orange, green, blue, violet and black. They were used to mark ground positions so that friendly aircraft would not mistake them for enemy establishments. Targets were indicated to our planes overhead on the basis of prearranged color patterns. The red grenades were particularly effective in snow-covered areas. In the Buna Mission area both hand and rifle grenades were put into service.

A particularly interesting smoke signal is the Sky-marker, designed to indicate the bomb release line for heavy bombardment formations. Dropped from the pilot plane, its spectacular fall, discernible for 25 miles, is the signal for other craft in the wing to release their bomb load. The Sky-marker has a thin shell and weighs about 100 pounds when filled with FS. It has frangible discs inserted in both nose and tail.

U. S. Smoke Missions

Some of the most outstanding smoke missions of the Chemical Corps during the war and their implication to military protection may be recalled in the smoke screening of rivēr crossings. Among these will be remembered the Volturno, in Italy, where a chemical unit firing mortar shells every 15 seconds, established a screen three miles long and nearly 1,000 feet high to blind the enemy. The screen was maintained for 18 hours and assisted our troops in making a successful crossing.

In September 1944 when the Third Army crossed the Moselle River in France, fog produced by our generator units merged with early morning mists to drift across the river and mantle enemy observation posts with an impenetrable haze. Under cover of this mist, an Infantry reconnaissance task force crossed to the wooded hills on the opposite side of the river. The vanguard of this mission maintained a screen for 30 hours before main Infantry assault troops took over.

For two weeks in December 1944 the 90th Infantry Division remained invisible when it crossed the Saar River, wiped out a number of enemy installations, took 1,200 prisoners and recrossed the river—all without being seen by the enemy. This was made possible by smoke from the M2 mechanical smoke generators, augmented by HC smoke pots when capricious winds made rifts in the screen.

During a 10-day preparation period, prior to the crossing of the Rhine, smoke in its many phases was employed to confuse the enemy in an effort to screen the build-up of troops and equipment. Under the command of Field Marshal Montgomery, the Ninth U. S. Army, the First Canadian and Second British armies participated in the 60-mile screen produced by employing mechanical generators supported by smoke pots and all other smoke producing devices.

The results of these and many other successful smoke missions evidence the importance of Chemical Corps smoke as a vital weapon of war.

Southwest Pacific Alamo Scouts

*by Lieutenant Colonel Frank J. Sackton**

ALAMO Scouts, always prepared to undertake dangerous missions behind the enemy lines, formed a bulwark of strength upon which General Walter Krueger, wartime Sixth Army Commander, called time and again for the most delicate and daring intelligence and combat missions in the Southwest Pacific. So successful were the Scouts, and so befuddled were their Japanese victims, that Scout activities became secret information.

The Sixth Army conceived in 1943 the idea to organize and train a highly specialized group of soldiers who could operate in jungle and close country entirely independently. The Scouts were to be trained as superior cross-country operators, and although they were to learn the jungle lore from natives, they were to outdo the natives themselves.

When the Sixth Army planned to invade the Admiralty Islands in February, 1944 with the First Cavalry Division, the Scouts were ready for an important role. Proceeding by stealth under cover of darkness, they landed on Los Negros Island and conducted a searching reconnaissance prior to the landing of the combat elements. Airplanes overhead relayed the Scouts' messages to the invasion forces who were then afloat. The pin-point intelligence of enemy strength and dispositions provided by the Scouts in this operation established them as an important element in the scheme of the Sixth Army. From the Admiralties to the Philippines, the Scouts shadowed and bedeviled the Japanese constantly.

The Sixth Army on September 1, 1944, was assigned the mission of rescuing and evacuating a prominent Dutch family and a number of Javanese that were held captive by the Japanese in the vicinity of the mouth of the Maori River in Dutch New Guinea. Estimates indicated that 26 Jap soldiers were located in the vicinity of the native village with the Dutch family and the Javanese. The Alamo Scout unit was assigned to the mission and promptly organized an Action Team of two officers, 11 enlisted men, and three native guides, and a Contact Team of one officer and three enlisted men. One Dutch Officer was assigned to assist. The Scouts laid their plans. PT boats would put the action team ashore while the contact team would remain afloat with the PT's, maintain communications, and bring the rescue boats in to the shore on call for the getaway. A secret landing was essential.

At 1915 hours on October 4th, the action team was placed in rubber landing boats from the PT's about three miles north of Cape Oransbari Point (see sketch). The contact team held the PT's in readiness for a quick getaway in the event the landing was observed. Upon reaching the shore one native guide was dispatched to reconnoiter to the front, one native guide to the right and one to the left. The Scout team remained boated but hovered near the shore. The natives returned in 20 minutes with a negative report whereupon the action team landed on the shore, hid the rubber landing boats, and signalled the contact team aboard the PT's that all was well. The PT boats then went out to sea so that maximum secrecy could be secured for the ground operation. Radio communication between the action and contact teams was relied upon to bring in the PT's at the appropriate time and place when needed.

The Scout team then proceeded in a southeasterly direction so as to approach the native village from the rear (the inland side). At 0200 hours on October 5th the team had advanced to point "A" without contact. At this point the team halted and set up all around security in a perimeter defense while a small detachment with the native guides advanced to the village for detailed reconnaissance to include the exact location and strength of the enemy weapons, and the location of the people to be rescued. Within an hour the reconnaissance element returned with detailed information (see sketch).

The Team Leader issued this plan of action:

The Team Leader with five men and one native would proceed to a point near hut "B" which was known to be occupied by 18 Japs. The assistant team leader with four men and one native would move to a point near "C" where four Japs were manning an outpost, armed with one heavy and one light machine gun.

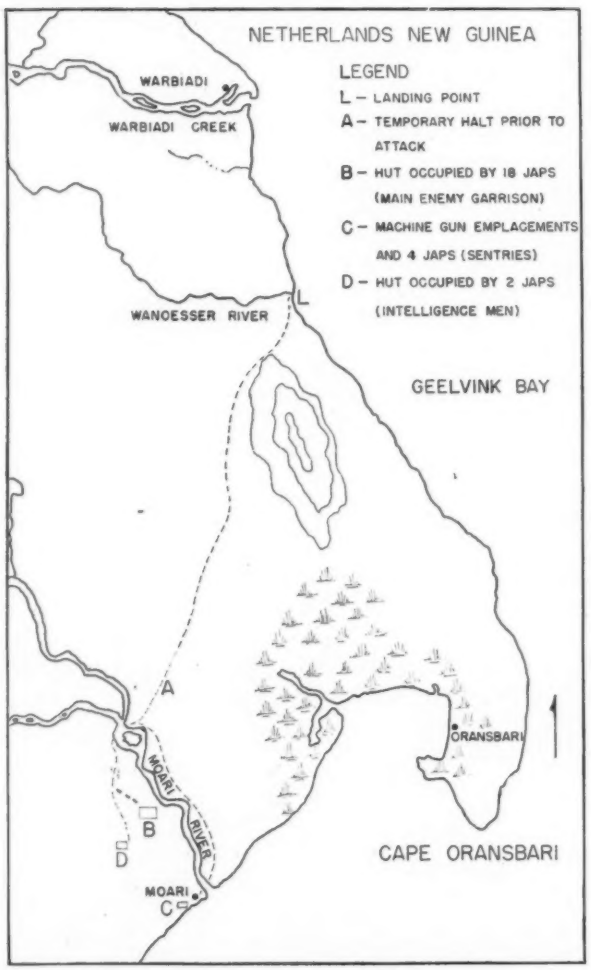
Two men and one native would proceed to a point near hut "D" which was occupied by two Japs and one native. (It was determined later that the two Japs were intelligence personnel while the native was the village chief who was being held as hostage.)

All elements were instructed by the Team Leader to be in position for attack not later than 0400 hours. The signal for all elements to attack was to be the initial firing by the Team Leader. The attack group at the most distant point (C) was directed to act independently after 0400 if it did not hear the firing signal.

The Team Leader and his group approached hut "B" by the route shown on sketch. In position at 0400 the

*Secretary, General Staff, GHQ, AFPAC.

team had surrounded the hut from two sides without being detected. Early morning light made it possible for the Scouts to make out the Japanese inside the hut who were apparently engaged in preparing breakfast. The Team Leader allowed 10 more minutes to permit the other groups to get in position, and at 0410 gave the signal to commence firing by throwing a phosphorus grenade into the hut. This resulted in lighting up the target and facilitated more accurate shooting. The Scouts opened up with everything they had and kept up the fire until the cease fire order was given at 0413. The team then rushed the hut to mop up but found that the initial fire had finished off the enemy in good shape. At the rear (west) of the hut two Japanese were found dead in a trench where they had fallen in an attempt to escape the hut. Ten Japanese were found dead inside. The team estimated four wounded Japs made good their escape to a swamp about 30 yards to the rear of the hut, but from the screaming and groaning it was assumed they were badly wounded and dying. The team leader decided not to risk entering the swamp in the half-light.



Over at hut "D," the Scouts heard the burst of fire that signalled the attack. They then employed a ruse to save the life of the village chief that was held as hostage. A native guide entered the hut and excitedly told of the "complete surrounding of the village by Americans." Then, as the two Japanese rushed for their weapons, he quickly led the chief outside. The Scouts closed in and dispatched the Japanese in short order.

The team to point "C" arrived in position at 0400, but the distance from either "B" or "D" was too great to permit them to hear the firing. They reconnoitered the area well, and at 0530 the team was disposed as follows: two men were on the left of the hut (North side), two on the right, and one man to the rear (in the direction of the village). At 0535 the one Japanese sentry who was on duty in front of the hut was joined by three others. The team leader deemd this an opportune time to open fire, and he promptly gave the signal by well aimed rifle fire on the target. Two of the enemy were killed outright while the other two were badly wounded. As they attempted to get away, however, the Scouts closed in and finished them off. No other enemy was discovered in the area, but a thorough search revealed the presence of two machine guns that commanded the approach to the village from the beach. One of the guns was a "heavy" of British manufacture. The supply of ammunition was abundant.

It was now 0550 and good light. The Scout leader issued his instructions: The Dutch officer was to round up the frightened Dutch and Javanese civilians. The assistant Scout Leader to establish a pickup point at hut "B" and receive the civilians. Other members of the team to form a perimeter defense around the pickup point to ward off any surprise attack by lurking enemy. Two selected scouts to search for papers and documents including the search of effects on the dead enemy. At 0615 the rescued persons were gathered and were well in hand for the trip to the beach. Preceded by five scouts, the party moved rapidly from "B" to "A". Three Scouts and three natives constituted the rear guard. En route to the pickup point the Team Leader talked to the contact team by radio and instructed the PT boats to come to the rendezvous point for the pickup. Upon reaching "L" the Team Leader assigned his assistant to the mission of organizing a perimeter defense on the beach to protect the party while he supervised the loading of the civilians. By 0800 the entire party was speeding to Biak Island where the evacuated people were turned over to the Netherlands Indies Civil Administration.

Box Score

a. 66 Dutch and Javanese rescued and evacuated to Biak.
b. 18 Japanese killed and an estimated four badly wounded.
c. No casualties in Scout Team.

Evolution of Japanese Cavalry

by Major Hal D. Steward*

"Although the Japs realized the importance of mechanization in modern warfare they didn't lose sight of the fact that Horse Cavalry still has a place in a modern army. At the close of World War II the Japanese Army had four Tank Divisions, 10 Independent Tank Brigades, and two Horse Cavalry Brigades."

JAPANESE military men like military men of other world powers decided in pre-World War II days that their Army must be greatly mechanized to be successful in battle. The Japs, however, were never able to complete their large-scale plans for mechanization. Lack of iron resources and mechanical ability among the Japanese people defeated their efforts.

These facts have been revealed in recently translated Japanese military reports. The translated reports were made available to the author through the courtesy of the 1st Cavalry Division, which at present is occupying Tokyo.

When the Inspectorate of Cavalry was abolished in Japan in 1941, and the Armored Force Headquarters was established, it was planned to have 15 mechanized divisions by 1950. However, before this aim could be realized the Greater East Asia War commenced and the plan had to be severely modified, particularly because of the shortage of iron. Hence, Japan was greatly lacking in mechanized strength at the end of World War II.

But, let us go back and see how the Japanese Cavalry followed approximately the same processes of evolution as the Cavalry units of the armies of other countries. By the time the Greater East Asia War started it had become a modern mechanized force.

The period of the great Japanese civil wars (Sengoku Era) was an era in which battles were decided by bow and arrow, and mounted combat was the most widely used method of warfare. At first, enemy Infantry camps were overrun by single horsemen armed with swords, lances or bows and arrows. Gradually, however, mounted combat as such developed, and eventually mounted forces which engaged in all aspects of war were formed.

In the 12th year of Temeun (1546) rifles were introduced in Japan from Portugal, and the various warring rivals began using them on a large scale. As a result, the tactics of employing Cavalry as mobile groups gradually ceased, and battles were determined by the firepower of rifles and sudden attacks with swords and lances. From 1546 until the modern period no great change in the Japanese Cavalry can be seen. It was used largely for purposes of scouting, patrolling, and command liaison.

Japan was shaken loose from her "closed door" policy by the nations of Europe and America in the first year of Meiji (1868). The country was stimulated by the culture of the world powers and carried out reforms along many lines, including the military for which rapid expansion plans were laid. The armed forces of Japan organized in the first year of Meiji consisted of six divisions plus the Imperial Guard Division.

In each of the six divisions there was only one troop of cavalry, used for scouting purposes. Even at the time of the war with China in the 27th and 28th years of Meiji (1894-1895) the Cavalry was a weak branch of the army used only for scouting.

When the Manchuria question arose and relations between Japan and Russia became increasingly worse, military preparations were expanded enormously. The total number of divisions was increased to 12. Three troops of Cavalry were included in each division, and two independent Cavalry brigades were organized. Finally, the Russo-Japan War occurred in the 37th and 38th years of Meiji (1904-1905). During this war divisional Cavalry was used for short-range divisional scouting and as a flank and rear guard for the division. The Cavalry brigades were used for short-range scouting; to maintain liaison and fill the gap between units; to guard the flanks; and, when necessary, engage in decisive battles.

The Cavalry brigade performed brilliantly in the

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Russo-Japan War. At about this time the Cavalry had become an important part of the Japanese Army.

Some of the outstanding examples of Japanese mounted Cavalry in the Russo-Japan War are:

1. In the engagement at Sha-ho (northern part of Liao-Yang) in October, 1904, the Russian Army massed a large force in the mountainous sector southeast of Mukden and attacked the right flank of the Japanese First Army. Their plan was to break through to the vicinity of Penchihu. The Second Japanese Cavalry Brigade under the command of Major General Kaninnomiya was near Liao-Yang. The brigade drove rapidly to Penchihu and attacked the flanks of the Russian Army, which was then trying to break through the flanks of the First Army. The Cavalry brigade finally succeeded in stopping the attack; it was the decisive factor in the victory of the Japanese forces in the Shaho engagement.

2. In the winter of 1905, both the Russian and Japanese armies were in bivouac because of the extreme cold. However, in January, 1905, the Russian Army gathered its forces southwest of Mukden and made a sudden assault on the left flank of the Japanese Second Army in an attempt to break through the Japanese lines. Under the command of Major General Akiyama the Japanese First Cavalry Brigade, which was at the time guarding the left flank of the Japanese Army near Heikoutai and Chengtanpao, stopped the Russian forces and broke up the attack. This Cavalry brigade's action was the basic reason for the victory in the Heikoutai engagement.

3. The combined Japanese Cavalry force under the command of Lieutenant Colonel Naganuma was used in the early part of 1905, as a raiding unit. This unit started from Inner Mongolia and circled in back of the Russian lines to Changchun, making quick forays against the rear of the Russian lines en route. When it reached Changchun it destroyed the railroad bridge of the South Manchuria Railway and threatened the Russian supply line. As a result, in spite of the fact that the unit was hard pressed during the Mukden battle, the Russian Army had to divert two divisions or more to guarding the railroad line. By causing the Russians to spread their strength in this fashion the Cavalry force contributed materially to the Japanese victory.

At the end of the war with Russia, Japan increased the Cavalry strength by two more mounted brigades.

Between the end of the Russo-Japan War and World War I nothing of note occurred in the organization, equipment or use of the Japanese Cavalry.

In World War I Cavalry units did nothing which was particularly outstanding, and after it developed into a war of position it seemed almost useless. Consequently, after the end of World War I, the discussion among Japanese military leaders arose as to whether Cavalry was any longer of value to an army. In Japanese circles such discussions were widespread and heated.

Some Japanese officers argued that the fact that Cavalry forces cannot operate in the face of firepower was clearly proved in World War I. Many decided that in future wars firepower will be used on a larger scale and with even greater intensity and that Cavalry units will not even be able to operate on a local basis. Some decided that victory will depend mainly upon fire superiority and that such units as Cavalry, which have only a temporary, relatively low degree of mobility, are out of the question and should be abolished.

Those Japanese officers in favor of keeping the Cavalry argued that Cavalry activities were limited in the first World War due to the special nature of the combat area. They stated that mounted Cavalry would be of particular value on the Asia continent where battles will be fought over large areas and rugged terrain.

Finally, the view that the Cavalry was relatively useless won out in military circles, and the opinion that emphasis should be placed on other types of mobile forces became more and more widespread.

Immediately after the Manchurian Incident (1933-1934), the First Independent Mixed Brigade was activated with two battalions of motorized Infantry (armored cars included). This provided the first opportunity to test such a unit. However, the topography of Manchuria, and in particular the primitive condition of the roads, caused constant breakdowns in vehicles and afforded little chance to employ the unit as the light, mobile force it was intended to be. Moreover, no one was accustomed to handling such a unit. The result was that the Japanese held little hope for the future of this type of mobile force, and the First Independent Mixed Brigade was deactivated immediately thereafter.

When the Nomonham Incident occurred and the Russian and Japanese armies clashed on the Western Manchurian border in 1939, the Japs felt the strength of Soviet tanks in full measure. As a result of this engagement, the Japanese Army realized the necessity for mechanization, and steps were taken immediately in that direction.

In a short time World War II broke out. The excellent results achieved in the early stages by the mechanized forces of the German Army were observed and the Japanese program of mechanization was stimulated accordingly. In rapid succession the Japanese Army witnessed the destruction of the Polish Cavalry forces by Germany's mechanized might and the amazing results of the mechanized, blitzkrieg tactics used against France. The Japanese Army was also influenced by the views of German Field Marshal Gudarian who held that mechanization was the key to modern warfare.

At the close of World War II the Japanese Army had four Tank Divisions, 10 Independent Tank Brigades, and two Horse Cavalry Brigades.

Although the Japs realized the importance of mechanization in modern warfare they didn't lose sight of the fact that Horse Cavalry has a place in a modern army.

Rocket Research Carries On

*by Lieutenant Colonel Harvey Rivkins**

PRACTICAL research on all phases of rocket warfare is being pushed by the U. S. Army Ordnance Department.

"Free Enterprise" is being used to exploit the peace this country has won in the deadliest and most costly of wars the world has known. The "Free Enterprise" consists of scientists, American industry, and the Universities of the Nation and they have been invited by Army Ordnance to participate in a twofold program.

First, is the military side—not only does the Ordnance Department want to acquire the entire "know-how" of long-range missiles but be able as well to produce a rocket that can be used for defense and offense purposes. Second, Army Ordnance has offered the rocket as a vehicle to science, industry, and learned bodies to utilize the warhead for many types of research in the lofty altitudes in the region of cosmic rays.

The Research and Development Division of Ordnance, headed by Brigadier General H. B. Sayler, who served as a railway artillery officer in World War I and Chief of Ordnance in the European Theater of Operations in the last conflict, isn't overlooking a thing, carrying on research in many fields.

Not only does the V-2 program have great impetus with the arrival of 1947, but intensive experiments are being conducted with the WAC Corporal, U.S.-made liquid fuel rocket; and the "Nike," a liquid fuel anti-aircraft missile.

The Army is conducting other experiments. For instance, there's a bombardment rocket, built along the lines of the German Waterfall, by General Electric.

Sparked by Colonel Holger N. Toftoy, Chief of the Rocket Division, and Lieutenant Colonel James G. Bain, Chief of the Guided Missiles Branch, Ordnance has made rapid strides in the firings of captured German V-2 rockets at the desert proving ground in White Sands, New Mexico.

Early collaboration between U. S. Army Ordnance and the Navy's NRL—Naval Research Laboratory—is paying dividends in the rocket program at the White Sands Proving Ground in New Mexico.

With the later addition of two other members of the rocket backfield, Science and Industry and the Army Air Forces, the Ordnance Department put on full steam ahead in its announced plan to fire 25 captured German V-2 rockets by the spring of 1947.

However, at year's end in 1946 after meeting with his V-2 advisory Board, consisting of Commanders Omar N. Spain and D. J. Dockum, of the Navy Department, Colonel M. F. Cooper, of the Army Air Forces, Colonel Hobart Hewitt, of the Army Ground Forces, Captain R. P. Jones, of the Signal Corps, and Mr. J. W. Crowley, of the National Advisory Committee for Aeronautics, General Sayler decided to continue the V-2 program until May 27, 1948. An additional 25 rockets will be added to the 25 that were to complete the program this spring.

As 1946 drew to a close, a roundup of accomplishments of the rocket program reveals some startling facts.

Of 16 rockets fired from 16 April to December 17, 10 were completely successful, four indicated failure of the control system early in their flights so the fuel had to be cut off from the ground by radio, thus crashing the missiles into the desert sands.

One propulsion unit blew up. Another rocket, in a freak flight, tilting to 15 degrees on take-off instead of the customary 5, stabilized itself and rose to a then new altitude mark of 93 miles. When it plummeted to earth, the rocket had ranged 131 miles from the launching site.

There were thrills galore for the eyewitnesses to the 16 rocket firings, starting from a humble static test on a crude concrete guillotine-like structure to the latest word in rocket fashions for firing V-2's—the Gantry Crane, an upside-down "U" shaped tower, with steel lattice effect and platforms, not unlike the miniature toy erector sets thousands of "future Admirals and Generals" are today playing with all over the land.

From a zero height at static test, the rocket has been propelled into the ionosphere to record a world's record altitude of 200,640 yards or 114 miles. The mark was accomplished in the first night shoot of the Ordnance Department's rocket program on 17 December at midnight. The fiery flame roaring from the rocket could be seen for 300 miles and resembled the tail of a comet.

A new wrinkle was tried in the warhead at this shoot, that of popping out "ersatz" meteors when the rocket reached an altitude of 120,000 feet. Nine rifle grenades had been converted into vehicles to hurtle out the meteors at 10-second intervals. The work was done under auspices of the Johns Hopkins Laboratory of Applied Physics, with Dr. James VanAllen at the rocket scene. The New Mexico School of Mines made the meteors, each of which measured about the size of a 10-cent piece, under the direction of Dr. E. J. Workman, president of the school and Dr. J. L. Paddison, pioneer in meteor development.

With the loss of the warhead which blew from the missile on descent, no positive proof has been obtained as to whether the meteors were actually fired. Scientists are divided in their opinions on the result. It was ex-

*U. S. Army Ordnance Department.

pected that the shaped explosive in the grenade would propel the artificial meteors lower than real meteor speed which is 30,000 to 100,000 feet per second.

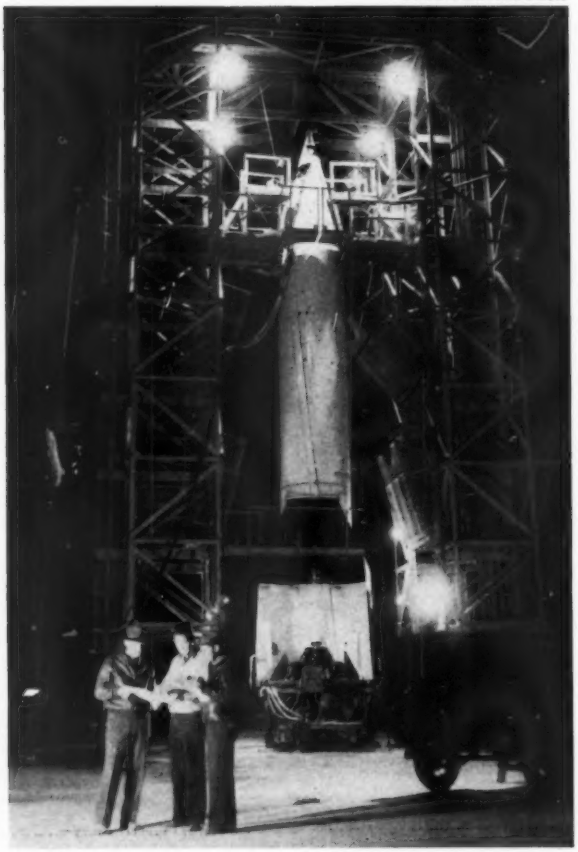
Dr. Fritz Zwicky, meteorite cosmologist, of the California Institute of Technology, who took an active part in the meteor launching, may plan another rocket shoot sometime next summer. He will have the aid of Dr. Fred Whipple, of Harvard, who has a number of specially designed cameras to track the rocket.

In the field of ballistics, Ordnancemen in the Ballistic Research Laboratory of Aberdeen Proving Ground, Maryland, have gained some valuable data by tracking every missile with radar, telescopes, phototheodolites, and doppler radio. Knapp Bowen cameras are also used to photograph the trajectory for the first few seconds after launching.

From these measurements have come complete records of the position, aspect, and velocity of the rocket throughout its flight. This data is extremely valuable to the designer of guided missiles. In addition, they form the basis for evaluation of facts concerning behavior of missile components, physics of the upper atmosphere, and military countermeasures.

The Ordnance Department is being greatly aided by the General Electric Company. To date General Electric has performed some outstanding work on the V-2 rockets. The concern has utilized recording devices on each rocket to measure performance of components such as jet vanes as well as turbine speeds, pressure in combustion chambers, time and end of burning, fuel tank pressure, rocket skin temperature, and vibration of the structure.

The task of preparing the V-2 for flight goes on at night under searchlights mounted on the big "gantry" crane.
General Electric Photo



Most of the work done by German engineers in the early days of the rocket launchings is now being handled by Americans. The Army Ground Forces has its First Guided Missiles Battalion stationed at White Sands. The assembly, handling and launching of the V-2 is now more than 50 per cent in the hands of the Army Ordnance, General Electric, and AGF personnel. Later, it is expected, the entire firing of each V-2 will be handled solely by U. S. personnel.

To plumb the physics of the upper atmosphere, the Army Ordnance Department has a technical panel under the leadership of Dr. E. H. Krause, of the Naval Research Laboratory for guidance. The body is composed of representatives of a number of leading scientific institutions that have been utilizing the warhead space for measurements of scientific phenomena at altitudes far in excess of any hitherto accessible.

Only through a free balloon flight had science been able to get instruments to a height of 22 miles.

However, with the record flights of the V-2, new fields of study in the upper atmosphere have been opened. Vital data have been obtained, including: Cosmic ray count, ionosphere experiments, solar spectroscopy, effect of cosmic radiation of seeds (packages of seeds were placed into warheads shot into the realm of intense cosmic rays), temperatures and pressures at high altitudes, studies of artificial meteorites and photography of the earth.

Although recovery difficulties have limited the success of some of the shoots, Dr. Krause has revealed that more valuable data on cosmic rays, solar spectroscopy and pressure and temperature have been obtained than by all other means during the 10 years prior to 1946. In addition, through the aid of the Johns Hopkins Laboratory, spectacular photographs have been obtained of the earth from altitudes up to 65 miles. Now, with improvement of recovery techniques, it is expected that information of even greater scientific import can be looked for in 1947. Besides Dr. Krause, on his panel are: Mr. G. K. Megerian, of GE, technical aide; Mr. J. Brinster, Princeton University; Dr. W. G. Dow, Michigan University; Dr. M. J. E. Golay, Signal Corps Laboratory; Dr. C. F. Green, GE; Dr. M. D. O'Day, Watson Laboratories (AAF); Dr. Newbern Smith, National Bureau of Standards; Dr. J. A. VanAllen, Applied Physics Laboratory, JHU; and Dr. F. L. Whipple, Harvard.

The Signal Corps of the Army, the Army Air Forces and the Army Ground Forces have collaborated with

Army Ordnance in tests of present radars to determine their effectiveness in detecting and tracking missiles of the V-2 type.

Scientists of Applied Physics Laboratory, Silver Spring, Maryland, have filled warheads of three V-2's with instruments for recording data on cosmic radiation in the upper atmosphere. Dr. J. A. VanAllen, Dr. H. E. Tatel, and Dr. R. P. Peterson are in charge of the studies to determine the nature of primary rays and to investigate changes they undergo while passing through the atmosphere. These studies are part of the basic research program carried on by the Laboratory under contract with the Navy Bureau of Ordnance.

The German rockets, reconstructed by Army Ordnance and General Electric engineers, have carried APL instruments on their two highest flights—104 miles on July 30, and the record of 114 miles on December 17. In these experiments cosmic ray showers were picked up and counted by two specially designed telescopes which looked out of small windows on either side of the warhead. The telescopes are made up of highly sensitive Geiger-Mueller counters placed between lead plates which sort out the particles for detection by the counters. Cosmic ray impulses thus received actuate the telemetering equipment located in a compartment just below the warhead which relays the signals to the ground.

Dr. VanAllen reports that the Applied Physics Laboratory investigation reveals cosmic ray showers are 300 times more numerous in the upper atmosphere than at ground level.

Counting rates of single Geiger tubes and "simple" telescopes were also obtained and yield data of special interest.

In the July 30, test, a continuous record of cosmic showers phenomena from ground level to 450,000 feet showed that the showers increased as the V-2 carried data recording instruments into the upper air, their frequency leveling off above 200,000 feet.

In addition to collection of cosmic ray data in the October 24, V-2 shoot, Johns Hopkins University scientists obtained a motion picture of the earth's surface from the time the rocket left the launching platform through its ascent to an altitude of 65 miles, and the first 20 miles of its descent.

Although the pictures were made to obtain information on the roll and pitch of the missile and other ballistic data needed for interpretation of the cosmic ray and spectograph data, they contain material of great interest to meteorologists and geographers.

After passing the peak of its trajectory, the rocket tumbled several times, enabling the camera which had been installed in the rocket's fuselage to photograph the horizon, showing an area of 40,000 square miles.

A special ultraviolet spectograph designed by Dr. J. J. Hopfield, of the Applied Physics Laboratory in conjunction with scientists of Bausch & Lomb was also carried in the October 24, missile. The instrument was successfully recovered along with some film preserved in a strong steel casette from the impact wreckage.

Later study of the film may furnish new information on the spectrum of the sun, heretofore excluded from human study by the light absorption of the earth's atmosphere.

Ordnance's V-2 program really began before V-E Day. In April 1945, a month before Germany collapsed, word was received by Ordnance headquarters in Washington that the V-2 assembly plant at Nordhausen and Peenemunde, Germany, had been captured, together with a group of German scientists.

Colonel Toftoy, an authority on Mines, who aided in "delousing" Cherbourg harbor in the early days of the Normandy invasion, flew to Europe to interview German scientists rounded up by Ordnance Intelligence teams under Major James P. Hamill. Hamill now is at Fort Bliss supervising the work of German rocket experts who voluntarily came to this country.

In July of 1945 V-2 parts began to arrive in the United States and were shipped to the Ordnance Proving Ground at White Sands which is under the command of Lieutenant Colonel Harold R. Turner. By the end of August, 299 freight carloads of parts were expertly handled by Turner.

The balance of the year saw General Electric making an inventory of missing parts and finding that only 25 V-2's could be assembled. With the aid of German scientists plans went ahead for the first firings in the spring of 1946.

Colonel Bain called a meeting of interested civilian and military groups to map out the V-2 program both from a scientific point of view as well as the Army. An interesting agreement came out of the session.

The Ordnance Department took primary responsibility for behavior and functioning of rockets; GE, the responsibility for assembling, handling, launching and determination of component functioning, assisted by German scientists and members of the Ground Forces 1st AAA Guided Missiles Battalion.

The collaborative program between Army Ordnance and the Naval Research Laboratory, later joined in by other agencies, progressed exceptionally well, in spite of the hundreds of problems which have arisen. The Army Ordnance Department, the Office of Naval Research, the Army Air Forces, Signal Corps, Army Ground Forces, universities, scientists and industry are going ahead in rocket research during 1947.

But don't let anyone tell you we're in for a push-button war!

We've got a long, hard road ahead of us and many moons will pass, as the Indians say . . . before we'll be zooming around in space ships, and enjoying rocket trips to the moon, stepping out on space platforms 5,000 miles up while our space ship gets a shot of cosmic rays for the long leg of the trip.

Research and Development — New War Department Division

*by Major General Henry S. Aurand**

World War II caught the United States lagging behind in scientific military development—but the war was hardly under way before the well-established fact was realized that science and technology play as big a part in winning a war as does a soldier with his weapon.

WHEN the United States entered the last war Germany was far ahead in scientific advancement. But, once American scientists got started, it did not take them long to catch up and surpass the Nazis.

The war proved conclusively that national security requires close cooperation between the armed forces and the forces of science and technology. The Research and Development Division of the War Department General Staff was created in June 1946, to maintain this relationship in time of peace.

When the Research and Development Division was established five policies were put into effect, as follows:

(1) The Army must have civilian assistance in military planning as well as for the production of weapons.

(2) Scientists and industrialists must be given the greatest possible freedom to carry out their research.

(3) The possibility of utilizing some of our industrial and technological resources as organic parts of our military structure in time of emergency should be carefully examined.

(4) Within the Army we must separate responsibility for research and development from the functions of procurement, purchase, storage and distribution.

(5) Officers of all arms and services must become fully aware of the advantages which the Army can derive from the close integration of civilian talent with military plans and developments.

To implement these policies, the Research and Development Division is staffed with selected Army officers and top-flight civilian scientists and engineers. The officers have been chosen on the basis of their experience and knowledge of the technological requirements of the Army and the combat conditions under which equipment must function. The civilian experts have been recruited from the laboratories of the nation's educational institutions, foundations and industries to assist the War Department on an annual rotation basis.

The Director of the Research and Development Division serves as adviser to the Secretary of War and the Chief of Staff on all War Department matters relating to research and development. He has responsibility for:

(1) The mobilization and application of national research and development resources in support of the mission of the Army in peace and in national emergency.

(2) Promoting progress in pure and applied scientific research of potential military value and economic feasibility.

(3) Developing, in collaboration with the Plans and Operations Division, new matériel and techniques in accordance with new strategic concepts and/or the latest advances in science.

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*Director of the Research and Development Division, War Department.

(4) Formulating and supervising the over-all research and development program of the War Department.

(5) Providing assistance and guidance to War Department research and development agencies in carrying out their respective programs.

(6) Directing initiation of projects, allocating responsibility, coordinating progress, and insuring consideration of user interest, including demonstration of new equipment and techniques, in connection with War Department research and development activities.

(7) Insuring that there is adequate representation between the War Department and other agencies on matters concerning research and development of War Department interest.

Assisting the director of the Research and Development Division is a Civilian Deputy Director and a Military Deputy Director. Dr. Cloyd H. Marvin, Civilian Deputy Director, has been president of the George Washington University (Washington, D. C.) since 1927. Brigadier General Earl S. Hoag, who served with the Air Transport Command during most of World War II, is Military Deputy Director of the Division.

Working under the Division's Directors, at the staff level, are the Executive Office, which is responsible for administration, policies and procedures within the Division; the Plans and Policy Office, which initiates, coordinates and supervises the planning for research and development; and the Control Office, which evaluates the progress of research and development within the War Department and recommends adoption or change of policies and procedures based on this progress evaluation.

The Division, at the operations level, is divided into the Research Group and the Development Group. The Research Group provides guidance for the mobilization and application of research facilities and methods, and of scientific personnel and information, to the solution of military problems or in furtherance of knowledge of potential military worth; exercises staff supervision over non-material research; provides direction for scientific educational programs, and prepares recommendations on legislation pertaining to research and development activities. These functions of the Research Group are carried out by the scientific branch and the scientific manpower branch.

On a level with the Research Group is the Development Group, which exercises staff supervision over the research and development projects of the developing agencies of the War Department; assigns research and development responsibility to the appropriate developing agencies; reviews and approves the assignment of priorities so as to insure a minimum of duplication of effort and a maximum of progress; approves the procurement of development matériel for experimental and service test purposes; insures coordination between the developing and using agencies throughout development; coordinates arrangements for the service testing of development matériel.

Comprising the Development Group are the ordnance-signal branch, the general matériel branch and the air branch. The air branch maintains liaison between Army Air Forces, Army Ground Forces and the Technical Services in development of air matériel for use by ground troops.

In addition to the regular organization of the Research and Development Division there is in the process of formation the War Department Research Advisory Panel, comprising outstanding civilian scientists and engineers. The Panel will be directly responsible to the Secretary of War and will be coordinated with the Research and Development Division through the Division Directors.

With the direct support and assistance of civilians—working within the Research and Development Division, serving outside the War Department as members of the Research Advisory Panel, or merely helping as interested scientists and engineers—the War Department has the benefit of broad guidance and is able to furnish science and industry with a firsthand understanding of Army problems and objectives.

The Army is fully alert to the fact that success in war will no longer be possible unless the Armed Forces have the best weapons that the scientific and industrial talent of the country can produce. Future planning must involve the concept of an established partnership of the military, science and industry.

Officers assigned to the Research and Development Division of the War Department General Staff are ones who have specialized in one or more branches of military application. They are classified as military service specialists and exercise staff supervision over the development propects of the Technical Services and Army Air Forces. Thus, one or more officers are assigned to deal directly with the Ordnance Department, the Army Air Forces, Corps of Engineers, Signal Corps, Chemical Corps, Medical Department, Quartermaster Corps and Transportation Corps.

For optimum operation of the Research and Development Division, the key officers and civilian scientists must obtain assistance from other interested War Department agencies. These agencies are the users of the equipment which is developed. Primarily, these users are the tactical organizations of the Army Ground and Air Forces. All of the many developing agencies, however, are users of certain special equipment. The Transportation Corps uses ships and trucks; the Signal Corps uses communications equipment; the Engineers use the heavy engineer equipment and bridging equipment, as well as many other supplies; the Medical Department uses the specialized articles necessary for evacuation and hospitalization, and so forth. The desires of the

users are very broad, but they must be definitely known before a War Department research and development program can be begun.

Once the program is prepared and furnished to the various research and development agencies of the War Department, they in turn interpret this program into the specific projects which they will undertake. These projects are passed upon by agencies known as technical committees, one for each research and development agency. These technical committees have in their memberships representatives of all other research and development agencies and of the users. When the technical committee has passed on a report, its minutes are sent to the Director of Research and Development for approval. Once this approval has been obtained, a project may proceed.

The reasons for submitting these projects to the Research and Development Division for approval are as follows: it must be determined that the project is in accordance with the program; whether the priority assigned to it is in accordance with the over-all requirements of the War Department; whether the developing agency recommended by the technical committee is the proper one to undertake the project, and whether there are other projects which will be duplicated and should be altered or changed if a particular project is approved. There are also budgetary questions that come to this review, as well as the reconciliation of differences, either between developing agencies or between a developing agency and the user.

Once the projects are under way, quarterly reports of progress are submitted to the Research and Development Division to assure progress, or to cancel projects encountering unsurmountable obstacles. Likewise, inspections are made of the installations at which the project is being undertaken. The actual work of research and development remains in the hands of the research and development agencies of the War Department.

The largest of these agencies is the Engineering Division of the Air Matériel Command of the Army Air Forces. Approximately two-thirds of the War Department expenditures for research and development are allocated to the Army Air Forces. The greater proportion of this money is spent for the development of pilot models which are flown in competitive tests in order that the best type of aircraft may be obtained for Army use.

The remaining research and development agencies, in approximately the order of their expenditure, are the Ordnance Department, the Signal Corps, the Corps of Engineers, the Quartermaster Corps, the Chemical Corps, the Medical Department and the Transportation Corps.

None of these agencies has direct jurisdiction at the moment over research and development in the atomic energy field. This is still performed by the Manhattan District, the organization and facilities of which have been transferred to U. S. Atomic Energy Commission.

The research and development agencies of the War Department may undertake a project in several ways. If a project is one of pure research, it is the policy of the War Department to make a contract with a civilian institution for the necessary work. This institution may be a university, a foundation or an industrial organization. In general, such projects are not classified as secret, confidential or restricted, unless the contractor feels that he has discovered something, the disclosure of which would seriously impair national security. With certain important exceptions, the application of available scientific information or facts obtained from these pure research contracts is usually done in Army facilities. There are almost 100 of these facilities scattered throughout the country, with one or two located outside of the continental United States. These facilities are not only for the application of known scientific facts to the development of military equipment but also for testing pilot items constructed as the result of development.

When an item of equipment has passed the required test, it is placed before the appropriate technical committee for standardization. When this standardization has taken place, the functions of research and development for this particular item have been completed. The standardizing action of the technical committee indicates that using and developing agencies have concurred that the item is suitable to be manufactured for military purposes.

This is an oversimplified description of the evolution of an item of military equipment from the time it is initiated in the research and development program of the War Department, through the project stage, to standardization. Many problems are encountered that are not solvable without the assistance of the great scientific and engineering resources of the United States. Many devices are utilized to maintain contacts with this scientific and engineering knowledge.

The War Department endeavors to maintain in its research and development facilities certain top scientists and engineers as civil service employees. Due to the competition for the limited number of these technicians the War Department has some difficulty in making both working conditions and salaries sufficiently attractive. Without this scientific and engineering personnel to furnish the backbone of research and development the program and projects would be seriously impaired.

Adequate personnel, both military and civilian, is essential if the Army's research and development program is to be carried out properly. In addition, it is imperative that the Army have sufficient facilities and funds for efficient and satisfactory execution of the program. The speed with which it can be carried out is dependent more than anything else on adequate Congressional appropriations.

A POINT OF LAW*

With Acknowledgments to the *H.L.I. Chronicle*

THE following extract from the *Military Gazette* of March 6, 1896, would seem to prove that the Army has not advanced very greatly in some directions, for the whole of the extract might well have been dated March 6, 1946.

(I)

Confidential (Discipline)

Boggleywallah,
May 23, 1898.

From Officer Commanding 2d Bush Whackers,
To Assistant Adjutant General Boggleywallah District.

Sir,—I have the honor to report for the information of the Major General Commanding, that I have placed Major R. Crosse-Grain under arrest. I have the honor to state that Major Crosse-Grain admits that he wore a false nose on parade today. He maintains that he has a perfect right to do so, as the use of a false nose on parade is nowhere prohibited in Army Regulations.

He also states that he used it as a convenient receptacle for the whistle which, he points out, is directed to be always carried, while no provision is made for its carriage in existing uniform. I can obtain no further explanation of his conduct from him.

I have the honour to be, Sir,
Your obedient Servant,
A. Chump, Lt. Col., Comdg. 2d B.W.

(II)

To Officer Commanding, 2d B.W.

Has this officer ever suffered from sunstroke?

Was he sober yesterday? and is he of temperate habits generally speaking?

Obtain medical evidence on these points.

By Order,
B. Snooks, Major,
25/5/98 A.A.G. Boggleywallah District.

(III)

To The A.A.G. Boggleywallah District.

Surgeon Major Jobbs has interviewed Major Crosse-Grain and states that in his opinion the prisoner is quite responsible for his actions. His previous medical history does not point to sunstroke as having affected his mind. Major Crosse-Grain has always been to my knowledge most strictly temperate.

A. Chump, Lt. Col., Comd. 2/B.W.
Boggleywallah, 26/9/98.

(IV)

From A.A.G. Boggleywallah District.
To O.C., 2d B.W.

The G.O.C. cannot conceive any reason for Major Crosse-Grain's conduct, other than that of temporary insanity. From sympathy with the Prisoner's wife, the Major General is willing, on receipt of a written apology from Major Crosse-Grain, provided also he retires from the service, to overlook the matter.

By Order,
B. Snooks, Major,
A.A.G. Boggleywallah District.
Boggleywallah, 26/5/98.

(V)

From Officer Commanding, 2d B.W.
To A.A.G., Boggleywallah District.

Major Crosse-Grain firmly declines to offer any apology whatever, as he considers his conduct does not require any. I must inform you that I consider any sympathy for Mrs. Crosse-Grain thrown away as that lady has been hysterical ever since witnessing the march past, and cannot be induced to discuss the matter seriously.

A. Chump, Lt. Col., Comdg. 2d B.W.
Boggleywallah, 26/5/98.

(VI)

To Judge Advocate General, 20th Circle.

The G.O.C. requests you will be good enough to frame a charge against Major Crosse-Grain, 2d Bush Whackers, based on the conduct described in the attached correspondence. Early compliance requested.

By Order,
B. Snooks, Major,
27/5/98 A.A.G. Boggleywallah District.

(VII)

From J.A.G., 20th Circle.
To A.A.G. Boggleywallah District.

I consider a charge under Section 12, Army Act, *viz.*, "False Personation," would be most suitable for the case. Charge Sheet in duplicate herewith.

C. Gobble, Col. Offg. J.A.G., 20th Circle.
27/5/98.

(VIII)

From A.A.G. Boggleywallah District.
To J.A.G., 20th Circle.

The G.O.C. cannot imagine why you wish to charge Major Crosse-Grain under this Section. Why not under Section 16, A.A., "Conduct unbecoming an officer and a gentleman"?

By Order,
B. Snooks, Major,
28/5/98. A.A.G. Boggleywallah District.

(IX)

From J.A.G. 20th Circle.
To A.A.G., Boggleywallah District.

**The Tank, Journal of the Royal Tank Regiment.*

There appeared to me to be legal difficulties in the way of the charge made as suggested. Perhaps I was wrong. Charge in accordance with Section 16, A.A., in duplicate herewith.

C. Gobble, Col., Offg. J.A.G., 20th Circle.

(X)

To A.A.G., Boggleywallah District.
From O.C. 2d B.W.

I have read over the charge to prisoner. He informs me he will object to the charge in as much as he alleges that the false nose worn by him was not unbecoming as "officer and a gentleman," indeed, that it becomes him more than does his own. He has stated his intention of proving this to the satisfaction of the Court by ocular demonstration. As a defense of this nature might tend to be somewhat ludicrous, I would respectfully suggest trial under another section of the Army Act, *viz.*, Section 40, "Conduct prejudicial to good order and military discipline."

30/5/98. A. Chump, Lt. Col., Comdg. 2d B.W.

(XI)

To J.A.G., 20th Circle.

For opinion.

By Order,
B. Snooks, Major,
30/5/98. A.A.G. Boggleywallah District.

(XII)

From J.A.G., 20th Circle.
To A.A.G., Boggleywallah District.

It is regrettable that there is no section in the Army Act dealing specifically with acts of this nature. Having regard to the nature of the parade, I am in some doubt as to whether the charge should not be preferred under Section 35, A.A., *viz.*, "Treason." I am afraid that I could not advise trial under Section 40, unless there is some evidence to show that the wearing of the nose (false) by the prisoner produced effects injurious to good order and military discipline. Did any of the soldiers show by their conduct that this was the case?

C. Gobble, Col., Offg. J.A.G., 20th Circle.
1/6/98.

(XIII)

To O.C., 2d B.W.

The G.O.C. distinctly heard and saw men in Major Crosse-Grain's Company laughing. Can you obtain any other evidence in support of this amongst the NCOs or men.

By Order,
B. Snooks, Major,
A.A.G. Boggleywallah District.

(XIV)

From O.C., 2d B.W.
To A.A.G. Boggleywallah District.

Upon inquiry I find it would be undesirable to seek evidence in this direction. Major Crosse-Grain, though unpopular with the senior officers, is undoubtedly extremely popular with the younger officers of the Regiment and the men. There is a feeling, I find, amongst the men, that their laughter is the principal cause of Major Crosse-Grain's trouble. I have reason to believe that, if called upon to give evidence, the men will state that the cause of their laughter was the conduct of the G.O.C.'s charger at the moment the Company marched past.

A. Chump, Lt. Col., Comdg. 2d B.W.
Boggleywallah, 1/6/98.

(XV)

To J.A.G. 20th Circle.

Please frame charge against Major Crosse-Grain under Section 40, Army Act.

By Order,
B. Snooks, Major.
A.A.G. Boggleywallah District.

(XVI)

From J.A.G., 20th Circle.
To A.A.G., Boggleywallah District.

Charge in duplicate herewith.

C. Gobble, Col., Offg. J.A.G., 20th Circle.
2/6/98.

(XVII)

From O.C., 2d B.W.
To A.A.G., Boggleywallah District.

I have read the charge to Major Crosse-Grain. He states that he is prepared to meet it. He desires me to inform you that he will call upon the G.O.C. as a witness for the defense. He intends to prove that the G.O.C. constantly wears false teeth on and off duty, and that the G.O.C. was wearing a set of false teeth, or at least some false teeth, on the parade of May 23. He also intends to call evidence to show that a Staff Officer in Badbownugger is allowed to wear a glass eye without question. I presume that prisoner is within his rights.

3/6/98. A. Chump, Lt. Col., Comdg. 2d B.W.

(XVIII)

From A.A.G., Boggleywallah District.
To O.C., 2d B.W.

If Major Crosse-Grain will send in his papers the G.O.C. is willing to overlook the conduct of that officer, and will dispense with further action.

B. Snooks, Major,
3/6/98. A.A.G. Boggleywallah District.

(XIX)

To A.A.G.

Major Crosse-Grain consents to send in his papers upon being granted leave of absence from this date, pending retirement, and upon being furnished with a copy of the correspondence in the case.

3/6/98. A. Chump, Lt. Col., Comdg. 2d B.W.

(XX)

From A.A.G., Boggleywallah District.
To O.C., 2d Bush Whackers.

Leave granted. Correspondence (original) herewith.

By Order,
4/6/98. B. Snooks, Major, A.A.G.

Postwar Organized Reserve Corps

*by Major General Edward S. Bres**

A NEW program for the Organized Reserve Corps is already in its first stages of implementation. More than one million members have volunteered for the Organized Reserve Corps, and over one thousand units have already been activated.

The theory of a well-trained and equipped Reserve is in itself not new. It was, in fact, proposed to the first Congress by our first President, George Washington.

World War II has taught us the value of preparedness, and it is toward this end that plans have been made for the Organized Reserve Corps. Realizing that the Regular Army alone cannot in itself provide for the adequate defense of this nation, the War Department has ordered the implementation of the new plans for the Organized Reserve Corps and the important role that it will play in the postwar Army of the United States. On June 6, 1946, each of the Army Commanders in the United States was directed, by the War Department, to initiate the present program for the Organized Reserve Corps.

The mission of the ORC is to furnish, in the event of an emergency, units that in time of peace will be organized and trained for rapid mobilization, deployment and expansion. (These units to be of the type and numbers which, together with the Regular Army and the National Guard, comprise the Army of the United States.) To furnish additional trained personnel, both commissioned and enlisted, necessary for replacement and the expansion of the Army of the United States.

The Chief of Staff is immediately responsible for supervision and control over the Organized Reserve Corps. The Executive for Reserve and ROTC Affairs is charged with facilitating business pertaining to the ORC, including liaison with and advising the Chief of Staff on matters pertaining to the Organized Reserve Corps.

The initial procurement of officers will be as provided in W. D. Circular 270, 1946, and by the appointment of warrant and flight officers of all components, and enlisted personnel of the Organized Reserve Corps of the first three grades who have had a minimum of six months' war service, and who are found qualified by an examining board under standards to be prescribed by the War Department.

Individuals with honorable and creditable service as commissioned officers in any of the armed services of the United States may, if found eligible, be appointed in the Officers Reserve Corps upon application to The Adjutant General.

Continuing procurement of officers will be by the appointment of graduates of Senior ROTC units and of officer candidate schools.

Continuing procurement for enlisted personnel, while Selective Service is in operation, will be in accordance with the provisions of AR 150-5, and W.D. Circular 270, 1946, and from among volunteers who have performed their required service in the armed forces.

Until the National Defense Act is amended to provide for warrant officers in the Organized Reserve Corps, warrant officers separated from the service are authorized to enlist in the Enlisted Reserve Corps in grade one, enabling them to remain active in the Organized Reserve Corps. In addition, those flight officers who have not qualified for appointment as second lieutenants, Air Reserve, may enlist in the Organized Reserve Corps in grade one.

Clergymen, doctors, and dentists, as may be essential and as prescribed by the Secretary of War, may be appointed and commissioned at any time regardless of previous military training.

Such technical experts, as may be essential, may be appointed and commissioned at any time, regardless of previous military training, under regulations to be prescribed by the Secretary of War.

Boards, composed of an equal number of officers from the Regular Army and of the Organized Reserve Corps senior to the person to be examined and operating under standards to be prescribed by the War Department, will be appointed and convened by direction of the major command as near as practicable to the place of residence of the person to be examined. At least one member of the board will be of the same arm or service as the individual being examined. Prior consent of Reserve officers to serve on these boards will be obtained, and they will not be ordered to active duty to serve on these boards. Boards will be appointed to examine applicants for commission; examine applicants for officer candidate schools; examine officers recommended for promotion; submit recommendations on the fitness of an officer for retention in the Organized Reserve Corps; submit recommendations on the fitness of an officer for reassignment to the Active Reserve from the Inactive Reserve.

The Active Reserve will consist of all qualified personnel of the Organized Reserve Corps who are required in T/O&E units of the Organized Reserve Corps, and in addition, all qualified personnel other than those assigned to units, for necessary replacements and expansion of the Army of the United States.

Units of the Organized Reserve Corps are classified and defined as: Class A Units, which will have assigned thereto complete T/O&E strength for both offi-

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*Executive for Reserve and ROTC Affairs, War Department.

cers and enlisted men; Class B Units, which will have assigned thereto full T/O&E strength of officers and at least an enlisted cadre; Class C Units, which will have assigned thereto full strength of officers only.

Composite units will be organized, composed of officer and enlisted personnel of the Active Reserve not assigned to T/O&E units, for individual training and administration.

In general, higher headquarters will be activated before lower units. This will facilitate the organization and control of lower units when they are activated. Each unit will be initially activated as a Class C Unit. Priority of activation will be given units allocated as Class A Units.

The location of the home station of a unit, except affiliated units, will be designated by the major command and will be based on the following considerations: Distribution of Reserve personnel; population of military age; availability of personnel for units requiring technically trained personnel; utilization of the unit upon being mobilized; location of Regular Army and National Guard units of similar types in connection with active peacetime training facilities.

When other conditions permit, several units of the same type will be located in the same vicinity. This will permit the maximum economy in instructor personnel, installations and equipment.

Since no legal authority exists at present for the payment of drill or armory pay (*i.e.*, nonactive duty pay), units may progress from Class C to Class B on a voluntary basis, and thus take advantage of the services of war veterans willing to volunteer for such service.

Requirements for activation of Class C Units are: to have a qualified commander available and sufficient officer personnel to organize the unit at 60 per cent strength under appropriate tables of organization; storage facilities for essential training equipment, and office space and conference room(s) available.

Requirements for expansion from Class C to Class B are: a unit must fulfill all the requirements of a Class C Unit; must have available for assignment 80 per cent of officers and 80 per cent of key noncommissioned officer personnel for a cadre; storage facilities for essential training equipment, office space and training space for officers and cadre, and the approval of the major command to expand to Class B.

Requirements for expansion from Class B to Class A: a unit must fulfill all the requirements of a Class B Unit; have assigned its complete authorized cadre, and have available for assignment at least 80 per cent of officer personnel and 40 per cent of enlisted strength (including cadre) under appropriate tables of organization; storage facilities for essential training equipment, office space and training space for officers and enlisted men, and the approval of the War Department to expand to Class A.

Requirements for Air Reserve Units are approximately the same, with the exception of required personnel. In the Air Reserve, Class C Units require 75 per cent of officer strength, Class B Units 75 per cent of officer and 75 per cent of enlisted cadre strength, and Class A Units require 90 per cent of officer and 50 per cent of enlisted personnel.

When a Reserve unit has met the requirements for expansion, major commands may authorize the expansion, if it is provided for in that portion of the Organized Reserve Corps Troop Basis allocated their respective areas. Any unit that is authorized to expand to a higher classification is not eligible to initiate the training program of the higher class until it is officially recognized as a unit of that class. No unit will be recommended for expansion to a higher class unit if it does not maintain its initial requirement of personnel, and does not meet the training standards prescribed by major commands. In order to retain recognition, all units must maintain the initial requirement for expansion and meet prescribed training standards.

Major commands will, whenever practicable, organize into composite organizations, such officers and enlisted men that are not assigned to T/O&E units in order to maintain interest of individuals to further their training and to facilitate administration.

The postwar policies governing the Inactive Reserve are presently in process of being implemented. The Inactive Reserve will consist of officers only, and of all sections authorized for the Active Reserve. All future assignments to the Inactive Reserve will be in the same section as that in which appointed and commissioned at the time of transfer from the Active Reserve.

The Inactive Reserve will be composed of those officers who temporarily cannot participate in the required activities of the Active Reserve. Officers residing in foreign countries will not be placed in the Inactive Reserve solely because of residence abroad; those officers temporarily assigned thereto from the Active Reserve who are under statutory retirement age, and who have failed to maintain the standards of training or efficiency required for retention or promotion in the Active Reserve, but who may reasonably be expected to requalify within one year for the Active Reserve, provided that the recommendation of the board for transfer of an officer to the Inactive Reserve is approved by the major command; those officers temporarily assigned thereto from the Active Reserve who have developed a physical incapacity which is believed remediable within one year; those officers in the Honorary Reserve, officers transferred to the Inactive Reserve must requalify for the Active Reserve within one year after removal of the cause for inability to participate in the required activities of the Active Reserve or be separated from the Officers Reserve Corps. Officers who are eligible for the Honorary Reserve may be transferred to that section provided that they make application for such transfer to The Adjutant General within six months after

the termination of the one-year period.

The general objectives of training are to plan and conduct training of the Organized Reserve Corps so as to enable each unit to achieve the ability to perform its mission in the field within six years after date of recognition, and for the training in composite units of individuals of the Active Reserve not assigned to T/O&E units.

For all individuals of the Active Reserve: the objectives are to develop and qualify individuals for their contemplated duties in the event of an emergency, for active duty with the Regular Army, and for duty in connection with any universal military training program which may be established; discover, develop and qualify officers with special abilities to assume technical, staff or command responsibilities up to and including the highest levels; and to develop personnel who can be utilized as instructors.

An additional objective for officers in the Active Reserve is to prepare, by progressive selection and training, officers qualified to assume command and staff responsibilities of all echelons up to and including the highest levels; to prepare those individuals who possess special aptitude for special or technical assignments in the Organized Reserve Corps units, and to make available the necessary facilities for the development of such individuals' military skill and knowledge. Full use will be made of depots, laboratories, and similar facilities of the technical services to develop the technical aptitude of such individuals.

Home training will be on a nonpay status until enabling legislation is enacted. No training above company level will be conducted without prior approval of the major command excepting schools for officers of all grades; communication and command post exercises; fire direction exercises and similar problems where it is necessary for individuals, companies and batteries to participate with headquarters companies or batteries in order to train headquarters personnel.

In carrying out the training policies of Army Ground Forces, the major commands will exercise command of and supervise the training of the Organized Reserve Corps in its geographical area, through the respective military districts; apply training directives and programs received from Commanding General, Army Ground Forces, for all Organized Reserve Corps units which would normally support a field army; supervise instructors by frequent visits by senior district instructors for the Organized Reserve Corps and by staff officers of the Army, or overseas departments, concerned; inspections of units both during home and field training periods by visiting staff officers of major commands concerned; conduct of tests by teams from major commands or from technical services as appropriate during both home and field training periods; spot inspections of Organized Reserve Corps units and visits to major commands by major forces, or by the chiefs of technical and administrative services or their representatives, to coordinate standards of training. Maintain command responsibility for efficiency and training within Organized Reserve Corps units.

Selected officer personnel will be assigned to appropriate courses at established service schools. Selected enlisted personnel will be sent to established technical and service schools. Certain technicians may be assigned to civilian schools. Selected personnel may be placed on extended active duty with the permanent establishment or units of the Organized Reserve Corps; appropriate Army extension courses will be available.

Unit instructors will be provided for units down to and including battalion level or equivalent grouping of smaller units and service-type installations, the number of instructors depending on geographical distribution of units and the work load within a given area.

The duties of unit instructor will be to advise the unit commanders in all matters pertaining to his unit; however, the instructor has no command functions within that unit, nor is he under the command of the unit commander. He will occasionally teach some subjects to a group of officers who will in turn become instructors. He will be intimate with the status of organization, training and equipment, and participate in training inspections. He will advise individual members of the unit on their personal military problems when requested. Applications for Army Extension Courses will be approved by him. All instructors are authorized direct communication with service schools on matters pertaining to Army Extension Courses. The unit instructor will also keep the major command advised, through channels, of the status of training and efficiency of Reserve units to which the instructor is assigned, and recommend or comment upon recommendations to the unit commander regarding promotion, transfer, reclassification, reassignment, or relief from duty of any personnel of the unit. He will in addition be responsible for the activities of the unit instructors of subordinate elements, and will maintain records of all training participated in by individuals receiving instruction under his supervision.

All persons appointed officers in the Organized Reserve Corps will be commissioned in the Army of the United States under the authority contained in Section 37 of the National Defense Act.

The authorized grades in which appointments may be made are second lieutenant to colonel, inclusive, in all sections, except that the following limitations will be applied to all officers not covered by W. D. Circulars 140 and 270, 1946. Chaplain Reserve—first lieutenant to colonel, inclusive. Medical, Dental, Veterinary and Sanitary Corps Reserve—first lieutenant to colonel, inclusive. Medical Administrative Corps Reserve—second lieutenant to captain, inclusive. Judge Advocate General's Department Reserve—captain to colonel, inclusive. Honorary Reserve—highest grade attained

while on active duty with the Army of the United States.

Appointments in every case will be for a period of five years, but an appointment in force at the outbreak of war or made in wartime will continue in force until six months after the termination of the war, should the five-year period covered by the appointment terminate prior to that time.

Policies for promotion in the reserve components of the postwar Army are now in the process of formulation. Promotion of commissioned officers will be based on length of service-in-grade; efficiency and demonstrated command or staff ability at the appropriate level. The following minimum educational requirements will be prerequisite for promotion, except where an officer has in time of war performed satisfactorily in the same or higher grade, or has clearly demonstrated his qualifications by actual performance of the duties for the higher grade. To general officer—the successful completion of an appropriate course of the Command and Staff College, or a local branch thereof. To colonel of a combatant arm—the successful completion of an appropriate course of the Command and Staff College, or a local branch thereof.

All officers nominated for promotion will be examined by a board of officers composed of an equal number of Regular Army and Reserve officers, as prescribed by the Secretary of War. Full consideration will be given by the Board for Army Extension Courses completed, active duty performed, and for inactive duty training.

The ages for appointment and promotion for the various grades will be as prescribed by the Secretary of War. Officers with wartime service will be given due consideration. Qualification requirements for officers of all reserve components will be standardized in order that officers thereof may be readily interchangeable.

Officers of the Inactive Reserve will be ineligible for promotion.

For enlisted men, the grades will be identical with those prescribed for the Regular Army. Regulations covering promotion and reduction of noncommissioned officers and privates first class will parallel the regulations prescribed for the Regular Army. Enlisted men will have opportunities to become commissioned officers through Officer Candidate Schools or the Reserve Officers' Training Corps.

Transfer between branches of the Officers Reserve Corps will be made only in the interests of the service, and when made will be without change in grade or date of appointment. The officer concerned will serve the unexpired portion of his five-year appointment in the branch to which transferred. Transfers between branches of the Active Reserve will be made only with the consent of the officer concerned. No transfers will be made without the approval of the general officers exercising supervision over the two branches concerned.

Transfers between Active and Inactive Reserve will be made upon the recommendation of a board.

Transfers between branches of the Enlisted Reserve Corps will be made only in the interests of the service, and when made will be without change in grade or date of enlistment. Transfers between branches of the Enlisted Reserve Corps will be made only with the consent of the enlisted man concerned. Transfers between branches of the Enlisted Reserve Corps may be authorized by commanders of organizations normally commanded by a general officer.

Each major force and major command headquarters within the continental limits of the United States will include an appropriate number of officers of the Organized Reserve Corps on active duty, who in addition to their other duties will assist and advise the commander and staff thereof in regard to Organized Reserve Corps affairs. Officers so detailed will serve for a period of not more than three years, and while so serving will be detailed to the General Staff with troops. Such officers will be in addition to any reserve component officers on active duty whether serving on the special staff or in any other capacity.

A mandatory age-in-grade, and a length of service-in-grade provision, as prescribed by the War Department, will be adopted, insuring appropriate age for the actual assignment of every officer. Exceptions to this policy in the case of officers with wartime service will be given due consideration.

During such period as may be required to reorganize the reserve components, and in any event not to extend beyond 1 January 1951, the assignment of all officers of the Organized Reserve Corps will be limited by those ages set forth below. Assignment will be terminated upon reaching the following birthdays:

Assignment	*2d Lt.*	*1st Lt.*	*Capt.*	*Major*	*Lt. Col.*	*Col.*
Army Air Forces Units and Qualified Air Res. Officers Necessary for Balanced Air Reserve Force	31	36	41	44	47	49
All other Air Reserve Officers	36	41	46	49	52	54
Army Ground Forces (including AGF Service Troops)	30	35	42	47	52	55
All others in the Organized Res. Corps	40	43	46	51	55	60

No candidate will be given an assignment who is less than 21 or more than 60 years old; nor, except for Army Air Forces, unless his age is such that he can serve at least one year before assignment would be terminated by the age limitation for each grade. For the Army Air Forces no candidate for assignment to a unit as second lieutenant shall be more than 27; as first lieutenant, more than 32, as captain, more than 37, as major, more than 40; as lieutenant colonel, more than 43; as colonel, more than 45.

All officers of the Active Reserve will, upon reaching the statutory retirement age, be transferred to the Inactive Reserve, thence to the Honorary Reserve.

Book Reviews

THUNDER OUT OF CHINA. By Theodore H. White and Annalee Jacoby. William Sloane Associates. $3.00.

An inside story on what is happening in China today, *Thunder Out of China* is a book well worth reading.

Professor John K. Fairbank writing in the New York *Times Book Review* said: "This book is of national importance, and bears directly on our fate to come. It may remake American policy. The lid is really off, and the American public can see what kind of dictatorship they are backing in the name of democracy."

Richard Watta, Jr., of the New York *Herald Tribune Book Review* wrote: "The clearest, frankest and most combatively readable key to an understanding of tormented China's current tragedy that the average intelligent reader could hope to find."

"A book of such power and persuasiveness that it holds the interest and attention as tenaciously as any mystery thriller. *Thunder Out of China* is a genuine national service, for only an enlightened public opinion can successfully check a foreign policy of folly," wrote Hallett Abend in the Philadelphia *Record*.

Thunder Out of China is recommended reading.

* * *

AN ERNIE PYLE ALBUM. Arranged and Edited by Lee G. Miller. William Sloane Associates. $3.00.

This is Ernie Pyle's story in pictures and text—arranged by his lifelong friend and biographer. From his boyhood days in Indiana through all of his campaigns, it is a picture supplement to Ernie's own books. It has over 300 photographs, 160 pages and 12,000 words of text.

The book is a must for all persons who followed Ernie's column during the war.

* * *

THE PLOTTERS. By John Roy Carlson. E. P. Dutton & Company. $3.50.

Here is another smashing exposé by the author of *Under Cover*. This book gives the lowdown on Klansmen, the Fascists, the Nazis and the so-called American Firsters. It also discusses the Communists in America at length.

The Plotters rips wide open the plans and aspirations of anti-democratic individuals and members of the political underworld who have made hate their business—who foment anti-Catholic feeling, spread anti-Semitism and racial discrimination. Carlson includes sections on veterans' organizations and certain conservative groups—destructive and constructive—who are playing a vital part behind the scenes in postwar America.

This book is also a tremendously fascinating personal adventure story of an undercover agent who dares to give names, dates and places.

INTRODUCTION TO NEW ZEALAND. Baker and Taylor Company. $3.00.

Every American soldier that visited New Zealand during the war in the Pacific will remember it.

Here is a book prepared by New Zealanders to answer the questions Americans ask about their island country. You can gauge its scope by these subjects, taken at random from its table of contents: The Face of the Land; Cities and Towns; People; History; Economics; Aviation; Farming; Industry; Shipping; Marketing; Imports and Exports; The Maori People; The Press; Broadcasting; Writers; Art; Science; Films; Education; Bibliography.

Printed throughout in color, the book is illustrated with hundreds of drawings, a large colored map and more than 100 photographs.

* * *

THE CHRYSANTHEMUM AND THE SWORD. By Ruth Benedict. Houghton Mifflin Company. $3.00.

The war and the peace have both made Japan headline news in the United States. Thousands of Americans are today with the occupation forces and the ties that are being forged between the two countries will have great consequences as time goes by.

We cannot afford to dismiss the Japanese as queer ducks. We must know their strengths and their weaknesses.

In this book an anthropologist writes of their view of life and of themselves. She sketches in the main outlines of their society and then describes their curious system of practical ethics, their ideas of good and evil, and the disciplines which make them able to live according to their code.

No work on Japan, not forgetting Percival Lowell or Lafcadio Hearn or Basil Chamberlain, has gone so deeply into the story of the development of the ideology of Japan as it is reflected in the daily manners and customs that condition their surprising conduct in warfare with the West.

The book is of interest as a contribution to the history of human thought, and as an illumination of the cause and conduct of World War II it is of first importance. It is a suggestive guide for the nations of the West in their effort to regenerate Japan, to make it in the course of time a peace-loving nation qualified to take its place in the new world order.

* * *

THERE WILL BE NO TIME. By William Liscum Borden. The MacMillan Company. $2.50.

This book seems to be a rehash of what has been written in newspapers, magazines and books for the past several years. The author makes us aware of nothing we don't already know.

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WARSHIPS OF THE WORLD. By Roger Kafka and Roy L. Pepperburg. Cornell Maritime Press. $17.50.

This is the finest and most complete book of its kind ever produced. It gives a day-by-day account of all the battles and major actions at sea from September 1, 1939 to September 2, 1945 and a detailed biography of every ship in every combatant Navy.

It tells you where and when each ship fought . . . and where, when, and how the ships that were lost met their end. The actions are listed in a separate index. An addenda carries through the disposal of enemy fleets up to September, 1946.

Complete statistics are given on every ship in every Navy in the world—from landing craft and auxiliaries to battleships.

There are almost a thousand photographs and hundreds of profile drawings of representative ships of each fleet.

CAREER OPPORTUNITIES. Edited by Mark Morris. Progress Press. $3.25.

This book provides practical information about a hundred leading occupations. It tells the reader exactly what he needs to know in order to enter a particular trade, business, or profession. It tells him how to qualify, what earnings he may expect, what personal aptitudes are desirable, what educational preparations are necessary, where additional information can be secured, etc.

Chief emphasis is given to those occupations which have permanent possibilities, constitute an essential part of the nation's economy and offer special advantages to veterans. Also included are some unusual occupations which have developed since the war.

PAT RIDES THE TRAIL. By Genevieve Torrey Eames. Illustrated by Dan Noonan. Julian Messner, Inc. $2.00.

This book is the story of a little girl who enters into the Two-Day 100-Mile Ride which is an actual annual event at Woodstock, Vermont. It is a story that will interest young people whether they ride or not, but it will have a particular meaning to those who do.

Pat Carey had wanted a horse of her own for all the five years she had lived on her Uncle Ben's farm in Vermont. She had saved the money she earned doing chores and as the story begins, she has just bought a horse at auction. She names him West Wind after her Uncle Ben's farm.

The story goes on to tell how Pat plans to ride West Wind in the 100-Mile Trail Ride held every year in Woodstock. How Pat and West Wind train all summer long for the great event. It tells of the obstacles that are put in her way and how she overcomes them.

This is a warm, friendly story about a young girl and her love and understanding of horses. It is the tale of a typically American family and a girl who accomplishes what she does because of her good sportsmanship rather than because of luck or superhuman ability.

It is a book for boys and girls from 10 years up.

MAKIN. Historical Division, War Department. Printed by the Government Printing Office. 35¢ (Add 10¢ for postage.)

This book deals with the operations of the 27th Infantry Division Task Force, under the command of Major General Ralph C. Smith, which between November 20 and 24, 1943, made the difficult assault landings on Makin, northernmost atoll in the Gilberts, and drove eastward to the tip of the island to rout the Japanese.

Tenth in the "American Forces in Action" series, published by the Historical Division of the War Department Special Staff, *The Capture of Makin* is based upon a first narrative prepared in the field from military records and from notes and interviews recorded during the operation by Lieutenant Colonel S. L. A. Marshall, now chief editorial writer of the *Detroit News* and author of the books *Bastogne* and *Kwajalein*.

These historical reports, titled collectively "American Forces in Action" stress individual tactical actions, relating the successes and failures of small army units, and as such should be valuable to army schools as well as of interest to combat soldiers who took part in the action.

The books deal with the tactical problems encountered in airborne landings, mountain combat, river crossing, etc., rather than with major combat engagements, and represent only a preliminary effort in the recording of the larger history of the war. This will be told in a series of forthcoming volumes entitled "The United States Army in World War II."

* * *

VOLUME VII OF NAZI CONSPIRACY AND AGGRESSION. By the Office of the Chief of Counsel for Prosecution of Axis Criminality. Printed by the Government Printing Office. Set of Eight Volumes, $18.00. The books are being distributed as each volume is completed.

Volume VII is the fifth of eight volumes entitled *Nazi Conspiracy and Aggression* and contains documentary evidence introduced during the trial as well as many documents used as background material in the case against major Nazi war criminals. Some of the most interesting documents are:

Keitel's order of October 31, 1941, directing the use of Russian prisoners of war in German war industry in violation of the Geneva Convention.

Opinion of the Chief of the German Intelligence that the German treatment of Russian prisoners of war is a violation of International Law.

Notes of Hitler's talk to his generals, August 22, 1939, announcing his intentions to create a border incident and attack Poland within a week.

The Commanding SS General's report on the elimination of Jews in Galicia.

Top Secret German Air Force Plan in 1938 showing plans for aggression.

Study by an Austrian psychologist imprisoned in a Nazi concentration camp, examining Nazi motives and psychological results.

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1719 K St., N.W. Washington 6, D. C.

MAUSER RIFLES AND PISTOLS. By Walter H. B. Smith. The Military Service Publishing Company. $5.00.

Here is another book in the tremendously popular National Rifle Association library books.

Covering every Mauser rifle and pistol, it is a book that every shooter, collector, gunsmith and European veteran will refer to constantly. It gives full information on every Mauser weapon. The book is fully illustrated with 139 unique photographs and drawings (many of them from official Mauser records).

The text reveals many hidden facts in the history of the Mauser firm, and brings to light the astonishing record of Charles Norris, an unknown figure in American arms development.

Mauser Rifles and Pistols is the second of several books, identical in format but varying in price, to be issued on the most important foreign and American weapons.

The first book in the series was *Walther Pistols*. It has 94 pages and 60 operating, stripping and parts photos and drawings. Price $2.00.

The third will be *Mannlicher Rifles and Pistols* and the fourth book will be *Remington Handguns*.

BRASSEY'S NAVAL ANNUAL 1946. Edited by Rear Admiral H. G. Thursfield. The Macmillan Company. $6.00.

This is the 57th year of issue of this unique handbook and commentary. The present number is largely composed of surveys, from various points of view, of the final phases of the War at Sea which came to an end in the period under review.

While the book is chiefly concerned with winding up the war operations with which it has dealt almost exclusively during the last six years, it starts by looking forward to the navies of the future.

THE AERODROME. A novel by Rex Warner. J. B. Lippincott Company. $2.75.

The author has justly called this a "love story" because it is from the incalculable power of love that have developed both the Aerodrome with its ruthless, inhuman efficiency, and the Village, with its sensuality, its muddle and stupidity. On the one side is the Air Vice Marshal, a character whose satanic pride forces him to reject the world as it is and to attempt to reshape the whole material of human life. On the other side is the youthful teller of the story who, brought up in the Village, and later serving with distinction at the Aerodrome, discovers an acceptance of ordinary life which is too vast to be reshaped by any one will.

RIOT CONTROL. By Colonel Sterling A. Wood. The Military Service Publishing Company. $2.00.

Here is a complete manual on how to control and handle riots.

The manual deals with the problem of riot control from the viewpoint of the platoon, company or battalion and their officers who find themselves pitted against a mob. It outlines practical suggestions for riot control training and operations; and also, briefly describes certain essential weapons, chemical munitions and special equipment.

THE HORSEMAN'S ENCYCLOPEDIA. By Margaret Cabell Self. A. S. Barnes & Company. $5.00.

Reviewed by Mrs. Beatrice Ayer Patton

This book is an important ready reference for anyone concerned with the world of horses, and, as such, is worthy of a place on the library shelf beside that nine-volume masterpiece, *The Horse,* by Sir Wortley Axe. Its greatest use, however, will be for the beginning horseman, for it is packed with information and common sense, and seasoned with tradition.

The line drawings explaining dentition are practically foolproof, and the paragraphs on feeding and simple medication are sensible and easy to follow.

The descriptions of the evolution of the horse and of foreign and domestic horses show much study, but I must add one comment on our American military riding. Every difficult feat of horsemanship practiced at the foreign military schools has been duplicated at our own school at Fort Riley, Kansas, where all forms of intrepid riding are considered training in those qualities of leadership which cannot be taught by non-dangerous sports. The feat of jumping horses through a window where they cannot see the landing, which Mrs. Self describes as performed only at the Italian school of Tor di Quinto, was performed many times before large audiences in 1921 and 1922 by General, then Major, George S. Patton, Jr., and his team of officers and men.

The paragraphs on dress and on teaching riding should be taken to heart, and the remarks on courtesy will be read by experienced riders with the same deep feeling with which they were penned.

Horses are being used more and more for sport in America, and beginners should learn the traditions connected with them by heart, while old riders refresh their memories, remembering always that, without rules, there can never be a game.

* * *

THE WAR REPORTS. By General of the Army George C. Marshall, General of the Army C. H. Arnold and Fleet Admiral Ernest J. King. J. B. Lippincott Company. $7.50.

The final responsibility for the military conduct of the United States' share in World War II rested upon the shoulders of three men—Generals Marshall and Arnold and Admiral King.

These three men were the top commanders of the armed services of the United States during the war, and their official, illustrated reports to the American people have been combined in a book called *The War Reports,* which has just been published.

With a foreword and descriptive notes by Walter Millis, an editorial and staff writer for the New York *Herald Tribune* and author of analytical books and articles on a variety of political and military subjects, *The War Reports* affords a complete running history of America's participation in the war, from General Marshall's opening account of the raising and training of our new armies in the period before Pearl Harbor down to Admiral King's final tabular summary of the overwhelming naval victory in the Pacific.

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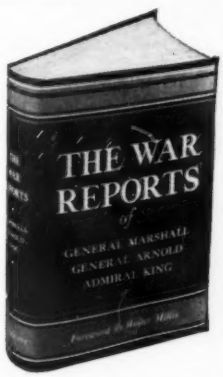

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* * *

HOW TO HUNT AMERICAN GAME. By Robert B. Vale. Military Service Publishing Company. $4.00.

Here is no pink-coat ridin'-to-hounds book on hunting—but an honest, down-to-earth, grass-roots guide to plain American hunting.

Rabbits and hares, quail, pheasants, grouse, wild turkey and ducks, deer, coons and possums, bears and practically every other kind of game are covered. Expert advice on dogs, guns, game refuges and conservation complete the contents of this practical, fascinating book on American hunting.

Mr. Vale, an experienced journalist who has devoted many years to hunting and writing about hunting in all parts of America, has distilled into this book the results of years of observation and practice. His wit and wisdom is matched by the illustrations of George Miksch Sutton, famed for his work as Curator of the Museum of Ornithology at Cornell University.

Some of the practical matters Bob Vale discusses sensibly in this excellent book on hunting are:

How to look for rabbits; Pheasants—advice on flushing, the use of dogs in pheasant-hunting, the habits of various types—Ringnecks, Reeves, Hungarian and Guinea Fowl; How to "walk down" a grouse; The peculiarities of guides and their unerring discernment of fourflushers; The use of waterfowl decoys; The "Gobbler Law" of conservation; Hunting equipment; Camp-cooking recipes; Doves, squirrel, raccoon, possum, deer, black bear; The training of the hunting dog; Hunting as a test of character; etc., etc.

* * *

HUNTING BIG GAME. Edited with Introductions and Notes by Townsend Whelen. The Military Service Publishing Company. Two Volumes. $4.00 each. $8.00 the set.

Here are two volumes that contain the most exciting big game hunting yarns ever written about Africa, Asia and the Americas.

Volume I covers big game hunting in Africa and Asia, while Volume II covers hunting in the Americas.

Ten superb stories on hunting lions, elephants, tigers, buffalos, leopards and sheep, with chapters on big game rifles, equipment and knives are included in Volume I. Volume II includes 10 thrilling stories on hunting rams, caribou, bears, musk-ox and other game, also with chapters on big game rifles, equipment, wilderness ways and dogs.

These tales open an almost entirely unknown world on sport; that of hunting man-killing big game alone, without the vast equipment and caravans of modern, organized hunters and explorers. The authors tracked in unexplored countries, living and surviving and earning a livelihood by the rifle alone.

The comments of the writers on the technical sides of their rifles and ammunition and equipment are extremely valuable to all hunters.

These anthologies make fascinating reading for the practical hunter or the armchair outdoorsman. Whelen has dug deeply into the literature of hunting and has selected, what, in his expert opinion, are the best big game hunting stories of all time.

A list of the authors included in Volume I are: Frederick Courteney Selous, William Cotton Oswell, Sir Samuel W. Baker, Arthur H. Neumann, St. George Littledale and Frederick Vaughan Kirby.

The authors of Volume II are: Charles Sheldon, Theodore Roosevelt, Vilhjalmur Stefansson, Daniel Moreau Barringer, George W. Sears (Nessmuk), Frederick Courteney Selous, Warburton Pike and Townsend Whelen.

* * *

TOGETHER: Annals of An Army Wife. By Katherine Tupper Marshall. Tupper and Love, Inc. $3.50.

Here is the story of an army wife that should be read by all service wives. Army officers will also find it well worth their time to read about the private and human side of the wartime Chief of Staff and newly appointed Secretary of State.

Mrs. Marshall accompanied General Marshall from his post as Assistant Commandant of The Infantry School, through duty with the CCC, the Illinois National Guard, duty with troops—and through those tense, demanding years when General Marshall guided the United States Army through the greatest war of all time.

Together is a warm, well written book, with excellent touches of humor. Mrs. Marshall quotes many letters that came to General Marshall from notable persons.

It is highly recommended reading.

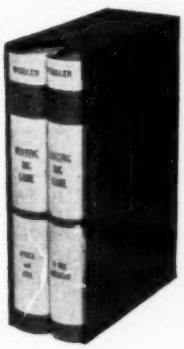
* * *

THE ROAD BACK. By James H. Smith and Natacha Rambova. Creative Age Press. $1.00.

This book discusses a program of rehabilitation for veterans. It is divided into four sections entitled: What Is Rehabilitation; Approach To Rehabilitation; The Civil Center Of Rehabilitation; and Industrial Program of Re-employment.

Superb Reading for Sportsmen!

HUNTING BIG GAME



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All three were written by Walter H. B. Smith, and endorsed by the National Rifle Association. Smith has to his credit already such outstanding successes as **The Basic Manual of Military Small Arms;** and **Pistols and Revolvers,** the first of the official NRA small arms books.

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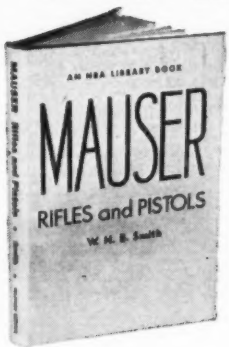

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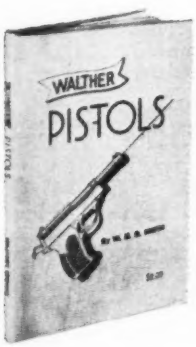

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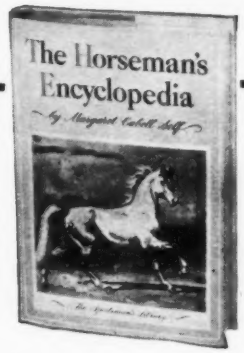

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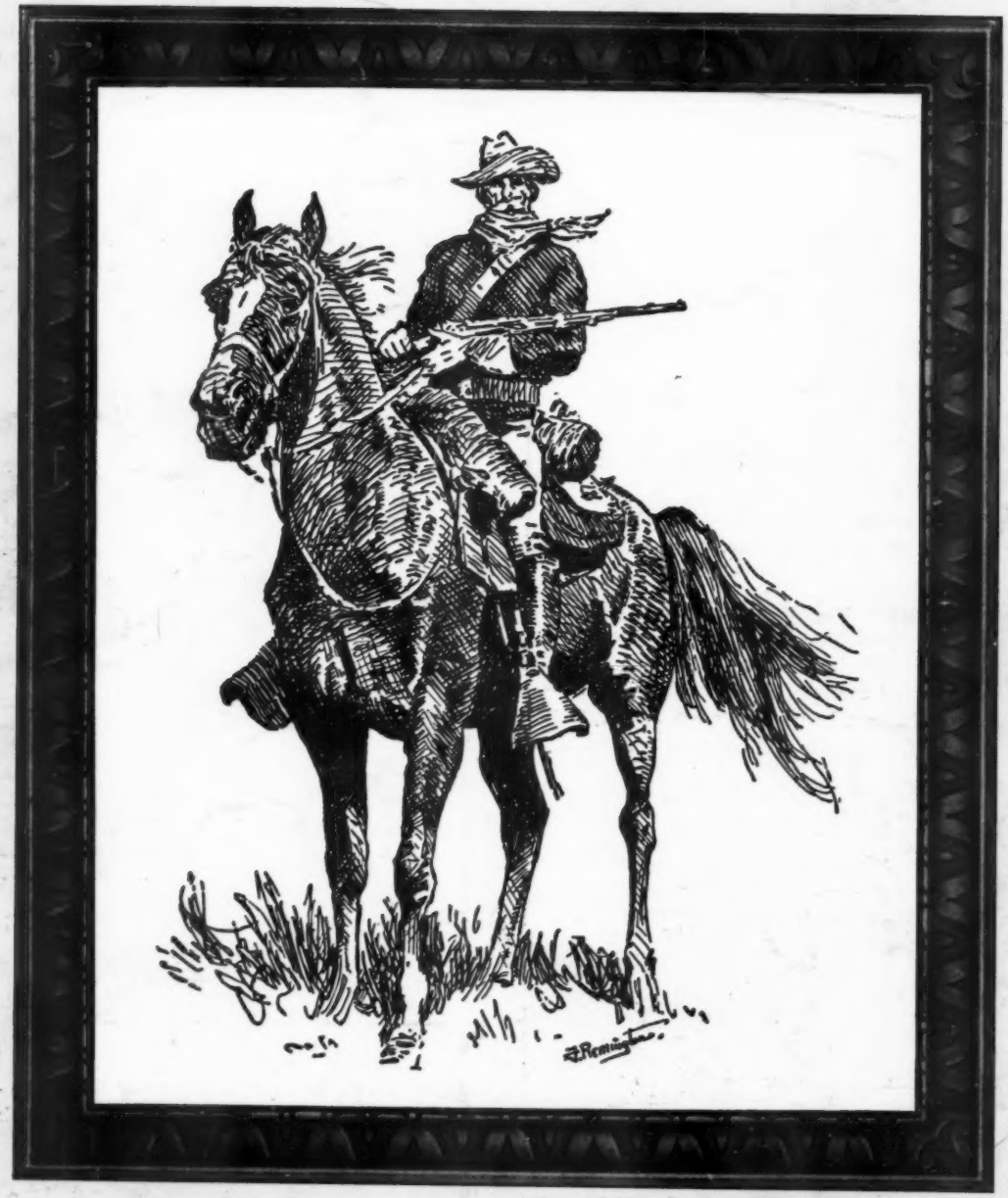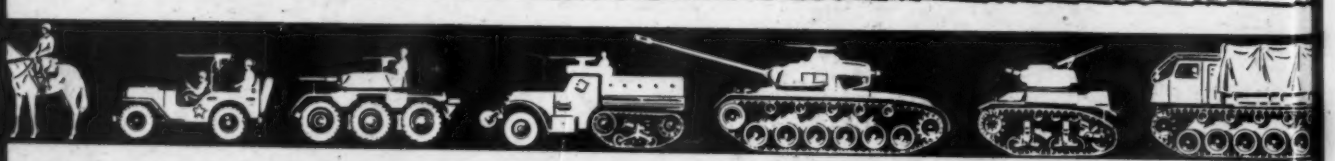
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